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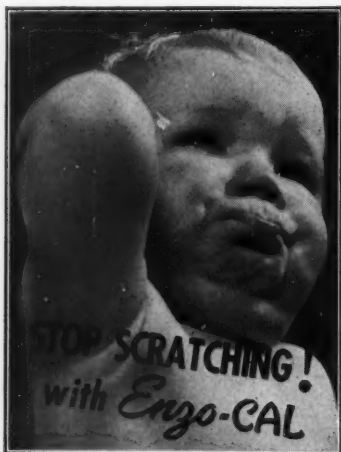
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The Condom as Fifth Column

IN connection with the program for long-time national defense, the question of falling birth rates and a stationary population demands consideration, more especially as regards conscription. For we have recently seen the catastrophic influence of the condom as a fifth column in Europe.

Rural birth rates, especially in the South, still more than replace urban populations. The large cities are far short of replacement. The passing of two decades, however, according to Frederick Osborn, speaking recently before the State Health Officers Association, will witness a rate of reproduction in the United States as a whole twenty per cent below that needed for replacement.

Eugenists advocate eugenic regulation of population and dream of a social revolution gauged to effect an increased birth rate in the case of competent and responsible parentage as against the numerical triumph of the lower orders of men. Obviously, this does not take warfare into much consideration, if any. It is a reform program that eugenics proposes; but warfare cannot be excluded in a determinedly unregenerate world, actuated largely by the most sordid considerations disguised as nationalistic ideals and needing Calibans much more than Prosperos to carry out its purposes. Reform must give way to the realities.

Admitting that regulation of population is in conformity with the law of evolution, it is none the less a fact that "the pendulum rhythm of human progress is now apparently in one of its backward swings and opportunities to cultivate safe and sane policies of social organization are conse-

quently restricted."

We are not protesting against upward human progress, but pointing out what best conforms with the dubious spirit of the age. With that spirit population control in the eugenic sense is out of step and will presumably be suspended *sine die*.

Meet the Auxiliary Morticians, Inc.

THE Euthanasia Society of America seems to be carrying on its gruesome project with increasing momentum, judging from its broadcasts by letter and its proposed assault upon the State Legislatures.

Of course, euthanasia, to be legal, will always be embraced "voluntarily" on the part of the patient and "strict safeguards" will be taken against abuse. So say the earnest and well-meaning proponents of this interesting technic.

Imagine selected quarry of the future taken into "protective custody" by the efficient field executives of euthanasia. Will the sufferers plead urgently for the privilege of volunteering? Well, they'd better! Will they be fully safeguarded by the politicians who will enact the required legislation? Who can doubt it?

Such a system will surely note a high degree of initiative and cooperation on the part of certain intensively affectionate and deeply humane relatives. Who cannot see them now? There will be much grist here for the mills of future novelists and screen writers, at least.

Like so many other noble (?) experiments this one might be put into effect with, at first, some degree of control; in time, the desire of influential relatives

would be decisive and euthanasia would tend to be a class measure affecting chiefly two extremes, the very powerful and the very weak; in the end, complaisant bureaucrats would defer to a "conditioned" level of public morals.

We do not believe that any of the present members of the Euthanasia Society of America will ever themselves die in the cold-blooded manner they advocate.

These things are always for the other fellow.

From a press release of April 10, 1950:

Mr. John Polglase, a member of the Wall Street house of Morton, long the subject of a chronic illness for which medicine could offer only palliation, was relieved by euthanasia yesterday at the age of eighty-three, upon the request of his nephew and only surviving relative, Henry Polglase, Assistant Attorney General. It is understood that half of the estate has been willed to the Euthanasia Research Bureau of New York, enabling a large increase in its personnel.

From a press release of January 12, 1951:

The record for euthanasia easement is at present held by the home for the aged at Chambersburg, where fifty-nine inmates elected this boon during the past year. This happy outcome for the volunteers and incidentally for the taxpayers of the district is in part attributable to the zeal of humanely disposed and public spirited members of the town board of Supervisors.

Relativity of Age and Health

SO CALLED old age and ill health are often relative terms. Lloyd George, Pétain, Weygand, Palmerston, Gladstone, Disraeli, Bismarck and Clemenceau nullify or at least modify our concepts of senility.

As for ill health, one can think of many examples of efficiency in the tuberculous, the paralyzed, and the endocarditic. Look over the Congress of the United States and be appalled if you like—or unperturbed.

The *Nation's Health* (May, 1940) points out that with all our credulous preoccupation with bodily ills it is not surprising that those who seek ruling power in perpetuity should make health programs of the type of compulsory health insurance to advance their purposes. Men, says the *Nation's Health*, may yet have the job of winning back freedom over their bodies as

they once wrested freedom over the custody of their souls from government.

It is very annoying to some people to learn that "ill-clad, ill-housed, ill-fed and ill-doctored" sharecroppers revealed better resistance to fatigue than an equal number of Harvard boys.



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Medical Neofeudalism

WE have all felt that if medicine was to be neofeudalized by the state, there was no reason, logically, why the law, the church, engineering, architecture and business should not be subjected to the same process. Indeed, in every country where medicine has been neofeudalized, or bolshevized, all these other segments of so-

ciety have passed under state control. There can be no manner of doubt that the same sequence of events would tend to follow in this country.

The "American way" presupposes a free democracy in which a decent prosperity is achieved by all classes, enabling self-respecting citizens to finance their individual medical care; but it must be admitted that the neofeudalists are strongly favored by present trends and present conditions, cleverly engineered as they are by forces determined to break down the idea of a free citizenry.

Neofeudalized or bolshevized medicine is only one more fake panacea, cooked up by political and social charlatans who despise and fear democracy. It does nothing in the case of England, partially bolshevized medically, to make her claims of "democracy" impressive, if indeed it does not align her with quack-controlled European countries operating systems of state medicine. The economic and social plight of the masses in England must be, at any time, quite as bad as in such Continental states in order to make necessary a system about as low in practical operation as chiropractic. And let it be remembered that the English system of today is not

—Concluded on page 355

PRECLINICAL *Medicine*

MALFORD W. THEWLIS, M.D.

Wakofield, R. I.

THE past two years have been the healthiest on record. A constructive program of public health, balanced diets, more effective therapeutics—and unknown factors—have greatly reduced the ratio of infectious and communicable diseases, and the death rate from those diseases is noticeably lower. The death rate from accidents has dropped. The span of life has increased to about 60 years and in all probability will reach 70 in a few decades. The only diseases still on the increase are cancer, diabetes, and the degenerative diseases of old age.

Physicians are treating an increasingly large number of aging persons, some of whom show symptoms of premature senility. The prevention of premature senile deterioration and early treatment of senile degenerative diseases will prolong life.

Preclinical medicine is the logical approach to premature deterioration. Only through a scientific study of the patient can the causative factors of premature degenerative changes be determined. It is sometimes possible to eliminate those factors and thus postpone disintegration.

THE goal of preclinical medicine is the study and interpretation of preclinical states, disease soils, predisease, constitutional factors, conditioning periods and disease tendencies.

Through a study of preclinical states a synthetic diagnosis is attained, an analysis of disease tendencies is made, and probabilities are weighed. Preclinical therapy attacks the disease "soil" long before the symptom stage is reached. Unfortunately, when roentgen rays or blood tests show up disease, it is often too late for successful interference.

Preclinical medicine deals with pathologic processes likely to occur, such as

peptic ulcer, diabetes, pernicious anemia, arterial hypertension, and arterial degenerative diseases. It surveys preclinical states—predisease or conditioning periods, and the detection of specific vulnerability increases the chances of preventing disease.

BY successful application of the principles of preclinical medicine the physician is able to eliminate certain pathologic probabilities before the symptom stage is reached. Once a synthetic diagnosis is established patients usually come to him at regular intervals for check-ups, and consult him whenever feeling slightly indisposed instead of waiting until actual disease occurs. Preclinical studies do not imply hospitalization of the patient, since they can usually be made in the physician's own office.

These studies make the patient health-conscious rather than disease-conscious, and the expense involved is certainly not greater than the cost of treatment of actual disease.

In the predisease period there are no specific symptoms, except a feeling of ill health—weariness, inexplicable fatigue—sometimes not even that. This consciousness of ill health is the only preclinical sign given by the patient. "It is the organism as a whole which must be studied. Each clue achieves its significance only in relation to the whole." The data obtained after a thorough study provide a synthetic pattern which is enlightening.

PREVENTION based on discovery and attack on disease tendencies is a modern conception of preventive medicine. The

physician is often confronted by patients who demand this form of protection, but he seldom knows how to grant it.

To show how preclinical states may be attacked, take the case of peptic ulcer. A patient of the linear (ulcer) type gives a family history of indigestion in his parents. He feels uncomfortable when his stomach is empty; and complains of slight distress between meals. He is the constitutional type for ulcer if his parents had indigestion or ulcer, and stands an 80 per cent chance of having peptic ulcer. This patient is placed on a protective regimen, foci of infection are removed, foods taken between meals, hot and cold foods and heavy vegetables eliminated, tobacco and alcohol taken only after a full meal. Mental strain is avoided whenever possible. The patient is usually willing to follow such a regimen conscientiously because when he does he feels better and realizes that if he observes a few simple rules he will in all probability remain well—as a matter of fact, he may be protecting himself against cancer later in life.

The diagnosis of vulnerability is based on sound premises; a study of hereditary influences shows that this person is likely to have ulcer unless he follows a protective regimen. There is a coefficient of error; this patient, if unprotected, had a 20 per cent chance of remaining free from ulcer.

DIABETES mellitus offers an excellent opportunity for constructive preclinical work. Since the heredity factor is a capital one, physicians should whenever possible question relatives of a diabetic patient. The ideal survey should include cousins, uncles, and aunts. A history of diabetes even in a cousin is not to be overlooked, and the patient should reduce his weight to normal and be placed on a high-carbohydrate-low caloric diet.

Since diabetes is so often associated with arterial degenerative disease preclinical measures may succeed in warding off these changes. Arterial degenerative disease is difficult to attack; however, certain of its aspects demand attention. A man aged 40 gave a family history of arterial degenerative disease in both parents at the age

of 60; he wanted to protect himself against it if possible. A preclinical study revealed several devitalized teeth, an inadequate diet, lack of fresh air and exercise; the blood cholesterol was 340 mg. When the blood cholesterol is increased it may be possible to lower it by desiccated thyroid and a lower intake of animal fats. What part hypercholesteremia plays in the cause of arteriosclerosis is not determined, but so far it is perhaps the best lead we have.

ARTERIAL hypertension is the subject of extensive study in predisease or preclinical states. Any one whose family history includes this condition should be under supervision. If the blood pressure is increased five or ten millimeters Hg. or if the systolic pressure is normal and the diastolic pressure slightly above normal this patient should be under supervision. Lightning of the metabolic load will often cause the blood pressure to drop and remain within normal limits. To repeat, a family history of arterial hypertension should make us consider seriously the slightest abnormality. Too often such patients are reassured and told that they are normal only to become the victims of serious hypertensive disease which cannot be influenced by any treatment. The measures which are effective in correcting abnormality in the predisease period have no effect when the condition is a long-standing one.

PERNICIOUS anemia is another disease in which the heredity factor is important. The conditioning period often extends over several years during which much could be done for the patient. The early correction of hypochromic anemia and a balanced diet are important factors in the prevention of pernicious anemia. The question of stress, excessive use of tobacco, and abuse of alcohol by patients who have an increase in the diameter of the red blood cells is serious and should not be overlooked.

Hypochromic anemia may not only help to condition the patient for pernicious anemia, later in life, but Ahlbom of Radiumhemmet, Stockholm, has shown that

simple achlorhydric anemia at the age of 18 or 20 may condition the patient for cancer of the mouth or throat at the age of 50. Magnusson, also of Radiumhemmet, has expressed the opinion that there may be a long latent period between the onset of the action of different factors and the appearance of clinical signs of cancer. This latent period may cover several decades.

These few examples suffice to show the possibilities of preclinical medicine, which open up a vast field of investigation. The public demands to be still more adequately protected against pathologic processes, it is aware that the medical profession has al-

ways done its utmost to prevent disease, but it looks forward to further advances in this direction.

PATIENTS seldom become hypochondriacal as a result of such investigations. On the contrary, they usually feel more secure because they realize that abnormalities, if discovered early, can often be eliminated or at least brought under control. It would be unwise to convey a false sense of security to the patient because it is, of course, impossible to foresee all possibilities. The patient must understand that any feeling of ill health must be reported without delay, even if it occurs a short time after an intensive study.

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TRICHINELLA SPIRALIS IN MAN

Muscle tissue from 1060 unselected autopsies was trichinous to the extent of 15.4%. There had been no symptoms suggesting trichinella infestation.

Ninety-five per cent of the infestations were dead, calcified and more or less disintegrated; 5% were demonstrated to be alive by feeding the infested material to rats and recovering live trichinella larvae.

Very heavy infestations were to be observed where the individual gave a history of having always enjoyed good health. In 1 patient, dying at the age of 84, as the result of an accident, autopsy did not show that the infestation had contributed to the cause of death.

—Thomas B. Pote, M. D.,
Am. J. M. Sc., Jan. '39.

EDITORIALS

—Concluded from page 352

much more than a state-controlled organization of the old "friendly societies"—a glorification of the discredited lodge system—which for so long inefficiently met the needs of England's innumerable underprivileged ones.

Doctors of all people know the meaning of the panacea. They know that there is no honesty in a panacea, whether it be a

drug or a crackpot system of medical practice that is alleged to be curative.

The charlatans who concoct these schemes mistake our professional patience for dumbness. We have no intention, however, of tolerating a partially feudalized or bolshevized medicine here.

Bureaucratized medicine fits a degraded citizenry admirably. If a citizenry really is debased, such a type of medicine cannot and perhaps ought not to be fended off. The populace then deserves it.

INTRAVENOUS ANESTHESIA and Analgesia

A Critical Review and Summary by

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Brooklyn, N. Y.

INTRAVENOUS anesthesia was first successfully accomplished in 1872 in Lyons, France, by Ore, who injected chloral hydrate¹. This drug, however, was not completely suitable for surgical purposes because the anesthetic action was slow in disappearing and the anesthetic dose was too close to the toxic dose. In time the various workers tried ether as a 5 per cent solution in normal saline², hedonal¹ (methyl-propyl-urethane) and ethyl alcohol³. None of these attained any lasting popularity because none could even roughly approximate the degree of fine control that the anesthetist had in inhalation anesthesia and has always required of all safe general anesthetic agents. Furthermore, the advent of endotracheal inhalation anesthesia in 1909 and its popularization by plastic surgeons during the World War made available a safer procedure than intravenous anesthesia using the drugs then known.

In the post-war years only paraldehyde gained any prominence and it has retained a small but lasting position as an intravenous anesthetic⁴. Since 1913 various authors have periodically reported the intravenous use of paraldehyde as a basal anesthetic or as a complete anesthetic for

short minor operations.^{5,6,7} Knowledge of the intravenous use of paraldehyde is still useful occasionally; therefore a working description is included in this paper.

THE introduction of the barbiturates in 1903 laid the foundation for modern intravenous anesthesia but it required at least two decades more of chemical discoveries and pharmacological studies before the short-acting barbiturates were found to be eminently suitable for this purpose. The long-acting barbiturates such as barbital, phenobarbital, dial and neonal produced their anesthetic effects too slowly, required large doses, left the patient deeply unconscious long after there was no surgical need for it, and disappeared only after 24 to 48 hours of drowsiness and languor. The short-acting barbiturates entered the medical field about twenty years ago and each, in turn, has been tried as an intravenous anesthetic. Sodium amytal (1929) was first.^{8,9} It is still widely useful in the medical management of neurological and psychiatric patients but it has been displaced as a surgical anesthetic because its action lasts longer and is less easily controlled than the anesthesia produced with the most recent very short-acting barbiturates. In rapid succession there has appeared pentobarbital sodium¹⁰ (1930), pernoston¹¹ (1927), evipal sodium¹² (1932), eunarcon¹³ (1935), pentothal sodium¹⁴ (1934) and, within the last few months, sodium isoamyl-ethyl-thio-barbiturate.¹⁵ Evipal soluble has been used most widely but pentothal sodium shows signs of superiority which point to its likelihood of becoming more popular.

The modern intravenous anesthetics fall into a group of very short-acting barbituric acid derivatives supplied in the easily soluble form of a sodium salt. All are packaged

¹Awarded the McAteer Prize, 1940, Medical Society of the County of Kings, Brooklyn, N. Y.

in ampoules. Pernoston and eunarcon are both bromine-containing and are stable in solution. Therefore, these are the only drugs supplied in a prepared solution of 10 per cent. All the others are distributed as dry crystals which are very soluble in water. Each ampoule supplies 0.5 gm. or 1.0 gm. of the agent. The one gram size is the more useful ampoule. The solution of pernoston or eunarcon must not be used if the ampoules have been exposed to light or warmth for several hours. The solutions of the other drugs, evipal soluble, etc., must not be used if older than two hours. All solutions must be clear before injection. All are colorless solutions except pentothal which is yellow-tinged. All are obtainable from commercial sources except sodium isoamyl-ethyl-thio-barbiturate, which is still under clinical investigation. Eunarcon is an improved and faster acting derivative of pernoston, and is marketed by Riedel-de-Haen. Evipal soluble is a product of Winthrop Chemical Co.; pentothal sodium comes from Abbott Laboratories, sodium amytal from Eli Lilly & Co., pentobarbital sodium from Abbott Laboratories, and sodium isoamyl-ethyl-thio-barbiturate from Parke, Davis & Co.

Physiology and Pharmacology

BARBITURATES are hypnotics primarily and not analgesics¹⁶, whereas morphine, ether, nitrous oxide, cyclopropane and chloroform are first analgesic and then, with increased doses, are hypnotic and finally anesthetic. The patient must be soundly asleep under barbiturates to secure analgesia; frequently he must be depressed into a deep second plane of surgical anesthesia before he ceases to make purposeful movements in response to painful stimuli.

The primary seat of barbiturate action is in the cerebral cortex and probably also in the subcortical ganglia, especially the hypothalamic portion of the diencephalon.¹⁷ The bulbospinal reflexes are very little affected if injection is not too rapid.¹⁷ This explains the quick and pleasant falling asleep as well as the relatively poor relaxing power of the barbiturates. When

maximal muscular relaxation is attempted in the average case the depression of the bulbar centers follows too closely on the effect of depressing the spinal motor centers. For complete muscular relaxation the barbiturates (and for the same physiological reasons, paraldehyde and morphine) are definitely not suited. Many fatalities early in the clinical trials of these drugs resulted from ignorance of this fact.

The barbiturates are largely dependent on the liver for detoxification and on the kidneys for excretion.¹⁸ The kidneys are more important in the handling of the long-acting barbiturates like phenobarbital, which is excreted in the urine to the extent of 10 to 40 per cent of the original dose. The very short-acting barbiturates are chiefly handled by breakdown into non-depressing decomposition products taking place in many tissues and organs but largely in the liver. The kidneys play only a very small role in decreasing the effective blood concentrations of the modern intravenous barbiturate anesthetics. Toxic doses of the barbiturates may injure the liver, kidneys and lungs in the same manner as infectious diseases. One must be sure of the functional sufficiency of the liver, kidneys and lungs of a patient who is to receive intravenous anesthesia.

THE various constituents of the blood—red and white cells, hemoglobin, chlorides, alkali reserve, clotting factors—all remain practically unchanged during and after barbiturate anesthesia. The blood sugar is elevated slightly and transiently.^{18,19,20}

The pulse rate usually increases 10 to 30 beats per minute; the blood pressure frequently drops 10 to 30 mm. Hg. A serious fall is occasionally seen, especially if the barbiturate is injected rapidly and in large doses.

The electrocardiographic records in man show no significant or constant deviations from normal¹⁹ despite the finding of arrhythmia and the occurrence of other serious changes in animals. Occasionally premature contractions appear during deep anesthesia or during cyanosis, as in other types of anesthesia, and disappear with the decrease of depth or removal of cyanosis.

The respiratory cycle is depressed in depth with the onset of sleep but the rate is usually slightly increased; the rhythm remains regular and cyanosis does not appear. Too large doses directly and seriously depress the respiratory center and only then does the rate slow. Irregular rhythm and cyanosis are manifestations of an excessive dose or an obstructed airway. The very great majority of catastrophes have begun with respiratory failure preceding cardiac cessation by at least a few minutes. This order of failure allows for successful resuscitation in most instances when adequate and prompt treatment is used and continued until the barbiturate has been destroyed or removed by an active metabolism and circulation.

The reflex response to pain frequently persists in deep unconsciousness. The pharyngeal and laryngeal reflexes are usually quite active although the anesthesia is deep and the musculature relaxed. The only explanation for this known to the writer is the tendency toward depression of the sympathetic nervous system under moderate doses of the barbiturates, while the parasympathetic nervous system remains relatively or actually hyperactive.¹⁵ It is for this reason that atropine or scopolamine premedication is helpful in avoiding the troublesome and occasionally dangerous laryngospasm.

The contractions of the parturient uterus are not affected; the motility of the gastrointestinal tract is somewhat depressed.¹⁷

The ratio of therapeutic dose, producing full narcosis, to minimum lethal dose, is between 3.3 and 4 for evipal soluble,¹² at least 3 for pentothal sodium,¹⁶ about 2.4 for amytal and pentobarbital,¹⁷ about 2 for pernoston.¹⁷ These margins of safety are sufficiently wide for clinical purposes provided the physician realizes the power contained in each cc. of barbiturate solution and carefully regulates the rate and volume of injection by the minute-to-minute condition of the patient. Furthermore, these therapeutic indices show a safe margin only when very deep relaxation is not required or attempted. A patient, moderately resistant to anesthesia, would require a dose too close to the lethal for safe usage

of intravenous anesthesia in abdominal surgery.

THE partial or complete failure to produce anesthesia must be expected to occur occasionally in this type of anesthesia. This exceptional occurrence is in the muscular, resistant patient whose metabolic capacities enable him (rarely is it a female) to tolerate very large doses up to the limits of safe practice. This type must be recognized and not forced into deep anesthesia lest a toxic dose be injected in the effort. In the early experiences of any single anesthetist the failures may be frequent because of excessive caution in dosage or rate of injection. As familiarity with this modality of anesthesia is gained the percentage of complete failures should not exceed 1 per cent and partial failures 5 per cent, provided the method is used for minor or semimajor surgery. Partial failures, requiring the addition of local, regional or inhalation anesthetics, must be expected in at least 20 per cent of cases requiring very marked relaxation.²¹

Intravenous barbiturate anesthesia does not lead to addiction or increased tolerance for barbiturates.

Idiosyncrasies to barbiturates are rare and unpredictable. Marked skin reactions, like urticaria, purpura, morbilliform or scarlatiniform rashes, may appear during or after anesthesia. Cholera-like diarrhea, polyneuritis, diffuse paralysis, markedly increased intracranial pressure—all these have been very rarely seen after intravenous barbiturate anesthesia for no apparent or known reason.²¹ These complications are so rare that they are not practical deterrents to the use of barbiturates in the very great majority of patients.

Technique

INTRAVENOUS anesthesia requires the sterile technique used in any intravenous therapy and the preoperative preparation of the patient for any general anesthesia. Accurate timing is always necessary; never should guesswork be allowed to replace the use of a watch. Because respiration is difficult to observe as accurately as when a re-breathing bag is used, one may employ the "butterfly" advised by Lundy.²² This is a

2" long, flat piece of absorbent cotton, bound by a strip of adhesive across the upper lip so that one "wing" flutters over the mouth and the other "wing" in front of the external nares. Further safeguards, advised by Lundy²² and Tuohy in their papers on pentothal but also applicable to all other barbiturate anesthetics, are the following rules. Use a 5 per cent solution instead of the 10 per cent solution supplied or recommended by the commercial houses (except Abbott Laboratories, who advise the use of pentothal sodium in 5 per cent solution). The diluent should be distilled water. Doubling the number of cc. of solution for a given dose does not increase, in fact frequently decreases, the absolute dose of the drug needed. With the 5 per cent solution the drug is injected more slowly; and perivenous injection or leakage rarely causes a serious reaction. One cc. of coramine may be added to the total volume of the solution of barbiturate so that respiratory depression may be prevented should the patient be sensitive to barbiturate action or should the drug be injected too rapidly.¹² This precaution of using coramine may be omitted as experience is gained in the technique of intravenous anesthesia.

Every tray for intravenous anesthesia should carry ampoules of picrotoxin, metrazol or coramine for a possible emergency. In addition there should be instantly available an inhalation apparatus with the oxygen and carbon dioxide supply ready for immediate use. These precautions should not be neglected even though one's experience has not required their use.

THE intravenous needle should not be of too small a gauge lest clotting occur and seriously disturb the course of anesthesia and operation. Inasmuch as rapidity of injection is easily controlled by watching the clock and by the use of dilute solutions, one need not suffer the disadvantage of a hypodermic needle to secure a slow inflow. The writer uses an 18 to 22 gauge 2" needle.

The armamentarium consists of the following:

- 1 or more ampoules of the anesthetic
- 1 syringe (5 cc.) containing 5 cc. coramine, 3 cc. metrazol or

- 1 cc. picrotoxin
- 2 — 20 cc. syringes for the anesthetic solution
- 3 — 2" 18-22 gauge needles, depending on the size of the vein to be used
- 1 medicine glass containing 40 cc. of distilled water
- 1 cup for Tr. Iodine
- 1 cup for 70% alcohol
- ½ dozen sponges and 1 sponge forceps
- 1 pharyngeal airway
- 1 tourniquet
- 1 cotton "butterfly"
- 1 ampoule file

The patient should come to the operating room with the stomach,²³ rectum and bladder empty. The patient should be lying down.^{24,25} The sitting position is to be avoided to prevent any marked drop of blood pressure. If intra-oral procedures are to be done it is essential that a mouth gag or prop be introduced between the teeth before the onset of anesthesia. A further aid is a preoperative spraying of 10 per cent cocaine solution over the pharynx and larynx. These preliminary measures decrease masseter, pharyngeal and laryngeal spasms and, because deep anesthesia to relax spasm is avoided, the dose of drug needed for the operation is much diminished.

The operative field should be prepared and the operating team ready to proceed before the anesthetist begins the injection. The injection is usually into an antecubital vein. Any vein may be used but, if a varicose vein must be the site, then caution is needed to prevent sudden overdosing by a pooled volume of barbiturate solution. Varicose veins should be emptied by stripping during the injection.

THE total amount of the barbiturate needed for an individual case cannot be predicted by any set of criteria known, although age, weight, sex and metabolic activity do influence the dose required to produce the desired depth.^{21, 25} It is as illogical and dangerous to set a predetermined dose of barbiturate to be injected as it is to try to gauge a predetermined volume of ether that a patient is to inhale. Each

dose must be adjusted to the individual case to obtain the minimum depth of anesthesia required for the particular operative procedure. This optimum dose cannot be estimated accurately enough by body weight tables so as to be a practical or safe practice. Every individual case is an exception to any rule reported by any author who has attempted to formulate a fixed dose rule.

The rate of injection should approximate 1 cc. of the 5 per cent solution of barbiturate every 10 seconds until the patient ceases to count aloud or answer questions. Then the injection ceases for 30 seconds to one minute to allow the full effect of the injected dose to appear. When the patient no longer responds, unconsciousness has arrived but analgesia may still be absent. If more than a basal or induction hypnosis is desired, one must continue the injection at the slower rate of 1 cc. per 15 seconds. The additional injections of cc. by cc. are regulated by the needs of the surgical procedure and the condition of the patient as judged by depth of anesthesia, blood pressure, color of blood or skin, and the rate and depth of respiration. It must be remembered that the depressive power of a cc. of solution is greater in the later stages of an anesthesia than in the induction or early periods, and therefore the pauses between the cc. doses should progressively lengthen. The rates of injection are only to be approximated. With increasing experience one finds that one varies the rate according to the circumstances of the case, such as the preoperative condition of the patient, the depth of the anesthetic level, the requirements of the surgery, the amount of premedication, etc. This is and should be no different from the administration of ether or chloroform. The beginner is advised to follow a certain rate of dropping of ether or chloroform, but the experienced anesthetist varies his rate, without actually timing it, with the circumstances of the case.

DURING induction and recovery there may be seen in some instances coughing, sneezing, delirium, twitching or jerking of muscle groups. These phenomena

are largely prevented by adequate premedication with morphine, by withholding premature stimulation by surgery and by pre-anesthetic clearing of the respiratory passages of their secretions. Deepening the anesthetic level or drying up and clearing out the airway, as the case may require, usually terminates these rough periods of induction or recovery. They are least frequently encountered when using pentothal sodium.

The respiratory rate and depth are the basic signs of intravenous as well as inhalation anesthesia. Deep breathing indicates light anesthesia; very shallow breathing points to marked depth. Slow respiration signals deep anesthesia. Oscillation or eccentric position of the eyeballs is found in light surgical anesthesia (first plane of third stage). The usual optimum depth is attained when the eyeballs are centered and fixed, the pupils are small or mid-dilated (allowing for atropine effect) and the lower jaw is relaxed (second plane of third stage). The respiration is then regular, rhythmic, quiet, shallow and at a normal or slightly increased rate. Only at this plane can one depend on having an analgesia which does not permit reflex, purposeful tremors or jerks in response to painful stimuli. Many patients are motionless and anesthetic, however, in the first plane of surgical anesthesia. Therefore this depth should not be increased to second plane unless the surgical manipulations require it.

An assistant is always an important factor for a smooth and safe intravenous anesthesia. While one anesthetist regulates the injection, the other is safeguarding the airway by supporting the lower jaw or inserting a nasal or oral airway, taking the pulse rate (and blood pressure if indicated) and watching the eye signs. In case of respiratory or cardiovascular failure one intubates the larynx and administers carbogen while the man at the needle is injecting epinephrine or analeptics.

THE usual maximum dose advised by most authors is the amount supplied in one ampoule, namely, one gram. This may be exceeded by an experienced anes-

thetist without greatly increased risk depending on the continued favorable status of the patient under the anesthesia. Many articles in the literature, especially that of Maloney,²² have reported the use of 2 to 4 grams of evipal soluble without untoward results. The writer has frequently injected 2 grams and once three grams in unexpectedly long operative procedures in good risk patients and in unusually resistant subjects. The most important points to remember under such circumstances are that the subject must be a good risk and that the later intermittent cc. doses must be given more slowly and less frequently than the earlier cc. doses. It is a safe rule, however, to avoid larger doses than one gram.

If the barbiturate solution is injected perivenously while the patient is still conscious he is likely to complain, especially if the solution is 10 per cent evipal soluble or 5 to 10 per cent pentothal. If such a perivenous injection has occurred the area should be infiltrated with distilled water and hot wet dressings should be applied to the area for 5 to 10 hours. Only very rarely does a slough follow.

AT the conclusion of every intravenous barbiturate anesthesia, except those of very short duration and little depth, the writer routinely injects intravenously 5 cc. of coramine so as to hasten the return of reflex activity and consciousness.⁴⁵ The analeptic action of coramine or metrazol, particularly when combined with 50 mgm. ephedrine sulfate by hypodermic, is of great value²⁷ and is analogous to the effect of carbon dioxide in hastening the reaction of the patient under inhalation anesthesia. Awakening may occur within a few minutes of the end of the anesthesia if the patient has received no premedication and only a small dose of barbiturate. A delay in recovery is to be expected in proportion to the amount of premedication and the anesthetic drug used. The first response is to painful stimuli; then, as the relaxed musculature regains its tone, the head and extremities are moved in coarse athetoid fashion. Other types of post-anesthetic sequelae are dizziness, localized muscular twitchings, disorientation, amnesia, diplopia, coughing and sneezing.

All these reaction syndromes are more marked in cases that have been unpremedicated. Marked excitement and restlessness occur in a small percentage of patients, especially those who possess an easily apparent hysterical or cyclothymic personality. The injection of $\frac{1}{4}$ to $\frac{1}{6}$ gr. morphine sulfate and 5 cc. of coramine greatly aids in promoting a quiet, peaceful, uneventful recovery period. Where the excitement is almost maniacal, as it may rarely be, the morphine sulfate should be injected intravenously and the coramine should be used in 5 cc. doses intravenously repeated every 10 minutes until the patient becomes calm or facial twitching appears, indicating that the maximum tolerance for coramine has been reached.

The details of technique described above remain the same whether one uses sodium amytal, pentobarbital sodium, evipal soluble, pentothal sodium, pernoston or eunarcon. The use of a 5 per cent solution, the rate of injection and the signs of depth, the rules of premedication, the safeguards against complications—all these remain the same no matter which one of these barbiturates is used. This simplifies the administration of intravenous barbiturates for anesthesia and analgesia by making one method universally applicable to all the short and the very short-acting barbiturates. This simplification is arrived at by removing from the various methods seen in the literature all the differing and variable factors except one, namely, the response of the patient.

Premedication

THE writer, as well as many other anesthesiologists,^{21, 24, 28} uses preliminary medication for intravenous anesthesia. This is contrary to the practice of an equally large group of anesthesiologists who fear that respiratory depression is more likely to follow such a synergistic combination.²⁹ Premedication is not likely to increase the possibility of respiratory depression provided 1) the premedicants are given sufficiently long before the anesthesia so as to secure their maximum effects just before or at the start of the intravenous anesthesia, and 2) the intravenous barbiturate solution is

administered in intermittent and gradually added cc. doses, as recommended in this and the most recent articles.

The usual premedicants are morphine sulfate and atropine sulfate by hypodermic injection. The dose of atropine sulfate is gr. 1/200 to gr. 1/75, varying with body weight, given 15 to 30 minutes before anesthesia. The morphine sulfate is given 1½ hour before anesthesia in doses from gr. ⅛ to ¼, depending on the metabolic rate, body weight, excitability, fever, pain and other factors which influence susceptibility and resistance to depressant drugs.³⁰

THE value of morphine lies in its tendencies toward producing analgesia and preventing muscular twitching and excitement during induction, light anesthesia and recovery. Morphine also decreases significantly the dose of barbiturate that would otherwise be necessary. The value of atropine is in its paralysis of the parasympatheticomimetic action of the intravenous barbiturates, thus decreasing the likelihood of excess mucus and of pharyngeal and laryngeal spasm. To secure the optimum effects of morphine and atropine they must be given at the correct time before anesthesia. Morphine injected longer than 1 to 1½ hours before anesthesia is less effective; and if injected closer to the anesthesia than ¾ hour, the morphine may lead to sudden and marked respiratory depression in the course of the anesthesia. Atropine injected longer than ½ hour before anesthesia has little influence against laryngeal spasm during the anesthesia, and if injected just before the start of the anesthesia its protective influence will be absent for the first 8 to 10 minutes of the anesthesia. When the surgery is to be performed in the respiratory passages or the esophagus it is important that the atropine be given in adequate dosage exactly 10 minutes before anesthesia. If the time does not permit that this interval elapse between the hypodermic injection of atropine and the operation then the injection of 1/150 to 1/200 gr. of atropine sulfate should be performed intravenously just before the start of the intravenous anesthesia for operations on the respiratory

tract or the esophagus. This intense atropine effect on the vagus is not necessary for other types of surgery. Local surface anesthesia may be advantageously combined with intravenous anesthesia for surgery in the upper or lower respiratory passageway or for esophagoscopy although experience eventually makes this unnecessary. Correct timing is therefore necessary for optimum anesthesia.

A preliminary small dose of a short-acting barbiturate, like nembutal gr. 1½ to gr. 3 by mouth, given 1½ to 2 hours before anesthesia, may also be used to advantage in preparing the unusually resistant patient such as the morphine or alcohol addict or the well-nourished laborer.²²

If a preliminary dose of barbiturate or morphine is given one must expect the patient to react less readily than the unpremedicated subject. The increased postoperative sleep is usually not of a marked degree and not sufficiently long to increase the hazard of the anesthesia.

Comparison of Evipal and Pentothal¹.

1. Evipal causes a less marked respiratory depression than pentothal.¹
2. Evipal causes a slightly more marked fall of blood pressure than pentothal.^{1, 18}
3. Pentothal induces anesthesia more smoothly and rapidly than evipal.^{1, 18}
4. Pentothal is more potent and therefore can produce a longer and deeper anesthesia, if necessary, when used in equal doses.²³
5. Pentothal is less likely to be associated with twitching or tremors.^{1, 18}
6. Pentothal rarely increases the pulse rate but evipal usually does.¹⁸
7. Pentothal anesthesia is associated with audible breathing in 50% of cases whereas evipal cases show inaudible breathing generally.¹⁸
8. Evipal usually does not affect the bearing down reflex in labor whereas pentothal does in 60% of cases.¹⁸
9. Pentothal is more likely to produce a local reaction if injected peri-

venously. Even a 5% solution of pentothal may be irritating whereas a 5% solution of evipal is not.

10. Pentothal causes postanesthetic vomiting even less frequently than evipal.
11. After pentothal, recovery is quicker and the mind clearer than after evipal.¹
12. After pentothal the patient may complain of a sulfurous taste and smell.¹ Evipal cannot cause this because of the absence of any sulfur radicle.

The rapid, easy, pleasant transition from consciousness into anesthesia is the chief advantage to the patient as compared with other methods and agents of anesthesia usually indicated for short operations. This form of anesthesia does not eliminate the need for a skilled anesthetist¹⁶ or for inhalation apparatus because both are required for safe intravenous anesthesia, adequately protected by safeguards. The only advantages to the surgeon are in the removal of anesthetic apparatus from the field of head and neck surgery and in the provision of a simple nonexplosive anesthesia for surgery with the cautery or electrical instruments.

This form of anesthesia is most useful in minor surgical procedures of any duration but requiring only a light level of anesthesia. It may also be applied, but only in very experienced hands, to short major operations in good risk patients. It is advantageous, too, for induction of anesthesia in the patient, especially the psychotic, who fears or resists the application of an anesthetic mask. After induction the general anesthesia may then be continued by inhalation agents in quantities and concentrations much less than would be needed in the absence of an intravenous barbiturate induction. A spinal or regional block that is wearing off before the surgery is complete may be neatly completed by intravenous anesthesia with barbiturates (or by intravenous analgesia with morphine—see below).

An advantage usually mentioned by many authors is the short recovery period. This is not true when the $\frac{1}{2}$ to 2 hours recovery period after barbiturates is com-

pared with the 3 to 15 minute recovery period that follows on vinyl ether,²¹ nitrous oxide or cyclopropane anesthesia maintained for an equally short anesthesia at the same depth as the intravenous anesthesia.

Disadvantages and Contraindications

THE chief disadvantage of intravenous anesthesia is the relative inflexibility of the method as compared with the minute to minute controllability afforded by inhalation anesthesia. Although this remains true when large doses and great relaxation are needed, as for major surgery, it is not a practical objection if the method is confined to the cases in which it is indicated and if the method is surrounded by the safeguards described in this paper.

Intravenous anesthesia is not practicable in children and very obese individuals with veins difficult to enter.²⁰ Children under 10 years of age are more safely and easily anesthetized by other methods, although the method has been successfully applied to them.³²

Certain disease states in the patient contraindicate, either absolutely or relatively, any intravenous barbiturate anesthesia. Diseases of the liver, either of primary etiology or secondary to sepsis, toxemia, malignant metastases, etc., constitute the chief contraindication.²⁰ The impaired function of the liver may result in a delayed decomposition of the barbiturates and so allow respiratory failure to occur in the presence of an otherwise sublethal dose. The margin of safety is too narrow in such cases.

Diseases of the kidneys do not prevent the safe use of barbiturate anesthesia unless definite functional insufficiency exists. This form of anesthesia does not injure the kidneys nor does it seriously decrease the rate of secretion of urine.²⁰ Of the barbiturates now used in intravenous anesthesia, only small fractions are excreted in the urine. In uremic patients, however, even these slightly unfavorable factors of barbiturate anesthesia should be avoided by the choice of regional block or cyclopropane anesthesia.

Low blood pressure of the type due to shock or debility is a serious contraindica-

tion because the intravenous barbiturates tend to depress the vasopressor mechanism.²¹ Essential hypotension, however, is not a contraindication; in these patients, however, one should premedicate with 50-75 mg. of ephedrine sulfate by hypodermic injection 10 minutes before the start of the anesthesia. If the operation is likely to be accompanied by shock or marked hemorrhage it is safer to avoid this form of anesthesia²¹ in view of its own tendency toward hypotension and its relative inflexibility as compared with inhalation anesthetics like cyclopropane.

Inflammatory diseases of or about the upper respiratory passages, e.g., Ludwig's angina, alveolar abscess, and cellulitis of the neck are absolute contraindications to intravenous anesthesia. Many deaths occurred until this fact was recognized and faithfully observed.^{21, 32, 33}

Asthmatic tendencies in a patient may be exaggerated to a serious degree of obstruction by the parasympatheticomimetic action of the intravenous barbiturates. This is a good reason for avoiding the use of this anesthesia in asthmatic syndromes,²¹ either bronchial or cardiac, and in patients with dyspnea at bed rest. Other diseases of the lung do not prevent the use of intravenous anesthesia provided the vital capacity is not seriously decreased and the airways are patent.

Intracranial lesions associated with obvious or potential respiratory depression must be considered contraindications despite the tendency of intravenous barbiturate anesthesia to lower the cerebrospinal fluid pressure.³³

Patients with cachexia, marked debility or advanced old age are poor risks for this as well as any other type of general anesthesia. Many deaths have occurred among the patients in this group, especially during the early trials of the barbiturates with the method of injecting a fixed dose.²⁷ The slow intermittent technique described above should allow a fairly safe anesthesia where there is a special need for intravenous anesthesia in this group of poor risks.

Resuscitation

JUST as no anesthetist should attempt to give an inhalation anesthesia without carbon dioxide and oxygen available on his machine, so no one should try an intravenous administration of anesthesia without the ready aid of oxygen, carbon dioxide, airways, ephedrine or epinephrine, analeptics (coramine, metrazol or picrotoxin) and manual assistance. This is not an anesthesia to be performed by a surgeon alone with the patient. It is not the type of anesthesia to be conducted in the average office of the surgeon or general practitioner unless an anesthetist is present, a portable gas machine is at hand, and the patient can rest at the office for two or three hours, if necessary.

The types of mishap that may be seen and their treatment are:

(a) Obstructed airway. This is indicated by irregular or gasping respiration, later by cyanosis. Any of these signs must be immediately remedied by holding forward the lower jaw by a finger behind each mandibular ramus. If this maneuver does not correct the situation then an oral, nasal or endotracheal airway must be inserted.

(b) Peripheral circulatory failure. This is manifested by pallor, small pulse volume and low blood pressure. Ephedrine sulfate, 25 mgm., or epinephrine, 3 m. 1-1000 solution, intravenously injected, usually and promptly elevates the blood pressure. If it does not do so within a few minutes then intravenous injections of coramine 5 cc., metrazol 3 cc., or picrotoxin 3 mgm. 1 cc. should be repeated every few minutes while the Trendelenburg position and oxygen inhalation are instituted.^{27, 34, 35} The analeptic drugs should be repeated until improvement results or slight twitching of the face appears, indicating the maximum of therapeutic stimulation. An infusion of 10 per cent glucose in normal saline is also indicated in case of prolonged hypotension.

(c) Respiratory failure. This is heralded by shallow breathing which then becomes very slow. If a gross error in dosage or technique has occurred then apnea may appear without warning. Cyanosis

rapidly follows if the circulation has not been affected simultaneously. Respiratory resuscitation requires the use of an adequate airway, artificial respiration with oxygen inhalation, and intravenous injection of analeptic drugs in full dosage.^{27, 34, 35}

(d) Cardiac asystole. This is rarely primary and is usually secondary to respiratory or peripheral circulatory failure. It is manifested by pallor and the absence of pulse, heart sounds and blood pressure. Its treatment requires the immediate and combined use of the measures prescribed for respiratory failure and peripheral circulatory failure. In addition, if improvement is not seen within five minutes one should use intracardiac and intramyocardial injections of epinephrine 1-1000 in doses of three to five minims, first into the right side of the heart, and if not immediately successful, repeated into the left side of the heart.²⁶ A final but occasionally successful maneuver is manual rhythmic compression of the heart to sustain the circulation while artificial respiration is continued and medullary centers are stimulated.

Fatalities

THE number of intravenous barbiturate anesthetics easily exceeds two million and is rapidly increasing daily. Its popularity has steadily grown in the past fifteen years despite the many fatalities which occurred early in its trial period and which have continued to appear in frequent reports as late as 1936. In the report of the referee for the Council on Pharmacy and Chemistry on *evipal* soluble,²⁹ the mortality rate appeared to be the very high ratio of one death in 1000 cases (twice that of chloroform anesthesia). At this rate the drug *evipal* would be too dangerous to use except under special indications. This would equally apply to all other intravenous barbiturate anesthetics because the mechanisms of anesthesia, complications and death do not vary significantly with *evipal*, *pentothal*, *eunarcin*, *pernoston*, *sodium amytal* or *pentobarbital sodium*. This poor showing for intravenous barbiturate anesthesia was attributable to the follow-

ing causes:

(a) Premature clinical introduction before adequate experimental and controlled studies were made on animals and human beings by qualified investigators.²⁷

(b) Commercial encouragement of all physicians, anesthetists or not, to use the drugs without adequate knowledge, safeguards and careful choice of cases.

(c) The attempt to use a fixed, predetermined dose, injected quickly and followed by withdrawal of the needle from the vein. Then, presumably, the surgeon could act first as anesthetist and then as operator.

The errors committed in the early years of barbiturate anesthesia have been avoided in the commercial development of the newer drugs.^{34a} At the present time intravenous anesthesia stands on a well tried and scientific basis so that the future record of this type of anesthesia should be free of fatalities. There still survives, though, the attitude of carelessness engendered by the technical simplicity of the method and by its ready availability for office use. But this must be tempered by the knowledge of the formidable power that lies in an ampoule of barbiturate so eloquently expressed by the 43 deaths and the many severe nonfatal accidents collected by the above mentioned referee.²⁷

We may conclude fairly that intravenous barbiturate anesthesia may be employed today with a reasonable degree of safety provided it is used with knowledge, skill and due regard for its limitations within a narrow field of usefulness.^{34a} With the clinical response of the patient as the chief guide it is apparent that the safety of the method becomes clearly the responsibility of the one who is watching the signs of the reaction of the patient during anesthesia. Like all other anesthetic methods, intravenous anesthesia is only as safe as the experience and judgment of the anesthetist make it.

Nonsurgical Indications for Barbiturate Anesthesia

THERE are three types of indications for the use of intravenous barbiturate anesthesia in the treatment of disease other

than as an aid to surgery:

1) Severe pain 2) Convulsions 3) Maniacal activity

Severe pain may require intravenous anesthesia if the danger of excessively large doses of morphine or drug addiction is to be avoided. Cases of coronary occlusion, severe burn, herpes zoster, gastric crises and transportation of wounded or injured persons—all these have been readily relieved of pain by intravenous barbiturate anesthesia.^{9, 37} Some cases were refractory to large and repeated doses of morphine but were promptly made analgesic and unconscious until the painful crisis was over or until more definite pain relief was secured.

Convulsions, when repeated, are best stopped by intravenous barbiturates. No matter what the etiology of the convulsive state, be it unknown⁴⁴ or known, eclampsia or tetanus,^{9, 38} meningitis or general paresis, strychnine or cocaine, the intravenous barbiturate method is certain, safe and controllable, much more so than the other methods generally advised such as rectal chloral hydrate or avertin or the inhalation of ether, ethyl chloride or chloroform.

Maniacal activity may be a very difficult feature of a case, leading to death by exhaustion or by preventing the application of specific curative measures. Delirium tremens,³⁹ chorea,⁴⁰ rabies, maniacal psychosis,^{9, 41, 42, 43} hysteria—all these may be nicely controlled by one who has available the knowledge and technique of anesthesia with intravenous barbiturates.

In the treatment of severe pain, convulsions or maniacal activity the technique of administration is the same as for surgical anesthesia. The injection must be continued until the stage of surgical anesthesia (third stage) is reached. Whether first plane or second plane of third stage is chosen as the end-point of the injection depends on whether the purpose is to produce a short anesthesia or a long one. For the latter purpose the second plane (fixed, centered eyeballs, absent corneal reflexes and regular shallow respiration) should be sought. This is the usual goal in the medical usage of intravenous barbiturates. Whether sodium amytal or pentobarbital

sodium is to be the drug of choice or a very short-acting barbiturate like pernoston, evipal, pentothal or eunarcon also depends on the desired length of unconsciousness. The very short-acting drugs dependably produce an effect that lasts only 1 to 2 hours whereas the sodium amytal sleep is of 6 to 7 hours duration and that of pentobarbital sodium is about 4 hours long.

In the choice of depth of anesthesia and the types of barbiturates one must consider not only the condition of the patient at the time of injection but also the probable condition of the patient in the next few hours as it is to be affected by the probable course of the underlying disease.

1. Convulsions are prone to be followed by marked depression of the central nervous system. Therefore anticonvulsant therapy must be chosen to produce an effect that may be easily varied to be as brief or as long as is necessary. For this purpose the best interests of the patient are served by the use of the very short-acting barbiturates like evipal or pentothal sodium, injected only to the point of stopping the convulsions and then repeating as often as may become necessary. 2. Severe pain that will probably last long, in a patient whose general condition is not likely to be aggravated suddenly by the progress of the disease, is best relieved by the use of sodium amytal or pentobarbital sodium. The 6 to 8 hours effects secured are much appreciated in certain instances of tabetic crises or herpes zoster neuritis. Severe pain that is likely to be of short duration such as renal or biliary colic may be treated with a very short-acting barbiturate. Severe pain whether it is likely to last for a short or long time, occurring in a condition that may rapidly become worse from the progress of the underlying disease, e.g., coronary occlusion, should be treated by intravenous barbiturates of very short action and in doses just sufficient to produce the lightest level of analgesia. 3. Maniacal activity or marked restlessness usually occurs in patients who are likely to show this symptom for long periods of time and whose underlying general condition is not likely to change rapidly for the worse. In these cases sodium amytal and pentobar-

bital sodium are indicated in doses producing anesthesia of second plane depth. Should the patient, however, be in poor general condition, then only the very short-acting drugs are indicated and the dose must be the smallest amount capable of quieting the motor activity. Excellent results are being secured with the use of evipal soluble in delirium tremens particularly.³⁹

The Mayo clinic has used intravenous pentothal anesthesia for the preoperative determination of the maximum drop in blood pressure that might be expected to result from surgical treatment designed to relieve hypertensive disease. The maximum fall is found to occur when there is no further increase of skin temperature, accurately measured by thermocouples, despite the continuation of third stage anesthesia.⁴⁰

Intravenous Anesthesia and Analgesia With Paraldehyde

PARALDEHYDE probably is the safest depressant drug in the entire series of fixed hypnotics and anesthetics,⁴⁷ yet the skilful commercial advertising of the many barbiturates has allowed this very useful hypnotic to slip into neglect. Its chief disadvantages, namely, the unpleasant odor and taste and the "burning" effect on mucous membranes, are easily overcome by the use of the intravenous route. It is worthwhile, therefore, to review the properties of paraldehyde and the technique of its intravenous use so that we may retain this valuable weapon in the very limited armamentarium possessed by the average physician against pain, convulsions and maniacal activity.

Paraldehyde, a polymer of acetaldehyde, is a colorless, volatile liquid with a characteristic, unpleasant, pungent odor and taste. Its specific gravity is 0.998; it is soluble in 10 volumes of water at 15 C. and is miscible in all proportions with alcohol or ether.

Its pharmacological actions are similar to those of ethyl alcohol⁴⁸ but the hypnotic effect is more powerful and more certain and is rarely preceded by any excitement phase. The drug is not analgesic until

hypnosis is induced, and the spinal reflexes are not depressed by safe doses, being similar in these respects to the barbiturates.

PARALDEHYDE is excreted chiefly through the lungs and only 1.5-3 per cent of the drug can be found in the urine. In the course of its excretion the concentration of the drug in the kidney or tracheobronchial tree does not produce any appreciable change with one exception, the onset of pulmonary excretion is accompanied by a coughing spell which ends in 5-10 seconds.⁵ The patient is usually unaware of the taste or odor of the drug when administered parenterally although others may perceive the odor for about 24 hours after injection.

The metabolic effects⁹ produced by intravenous administration are as follows:

1. the body temperature is practically not affected.
2. the pulse rate increases about 20 beats per minute and becomes normal by $\frac{1}{2}$ hour after awakening.
3. the respiratory rate increases about 5 beats per minute for about the same length of time as the pulse increase.
4. the diastolic and systolic pressures usually drop about 10-20 mm. immediately after injection and return to normal in about 15 minutes.
5. the blood sugar is elevated about 30 mgm./100 cc. for 24 hours.
6. the NPN is decreased 1.5-9.2 mgm./100 cc. for 24 hours.
7. the hemoglobin concentration is increased 5-20%, average 11%.
8. the red blood cells are increased 0.2-2.45 million per cc.
9. the white blood cells are increased 600-14,800, average 3,160.
10. the polymorphonuclear neutrophils are increased 3-12%.
11. the mononuclears and the lymphocytes are increased 2-12%.
12. the blood platelets show a great increase in every case, ranging from 70,000 to 200,000.
13. the coagulation time is always shortened, the average being 60%.

14. the intraspinal pressure is always reduced 80-100 mm. water.

(All of the aforementioned effects, except where otherwise stated, last about 24 to 30 hours). All of these changes are indicative of a relative or absolute increase in the formed elements of the blood.

In therapeutic amounts paraldehyde does not depress the heart or respiration.⁴⁸ Its margin of safety is very large. While the usual range of intravenous doses is 8 to 15 cc., the lethal dose probably is 40 to 60 cc. intravenously for a 150 lb. man.⁸ The actual lethal dose is not known but we may arrive at some concept of it by knowing that recovery has followed an oral dose of 100 cc., and that Beauchemin and his colleagues calculated the fatal dose to be 120 cc. by mouth and 40-60 cc. intravenously on the basis of careful experiments with animals.⁵ Another safety feature of paraldehyde is, that when excessive dosage is used, the respiration ceases before circulation⁸ and resuscitation is easy and prompt, responding to the very same technique and agents recommended in the discussion of barbiturate overdosage.^{34, 35}

The repeated use of paraldehyde leads to tolerance and habit-formation, especially in addicts of alcohol and other drugs. This is not of special importance in the occasional need for intravenous paraldehyde but it indicates that larger doses may be required in alcoholics and in those rare cases subjected to repeated use of paraldehyde.

The parenteral use of paraldehyde was first reported by Noel and Souttar, using 5-15 cc. of paraldehyde and 5-15 cc. of ether in 150 cc. of cold normal saline, infused at the rate of 5-10 cc./min. for anesthetics less than 20 minutes.⁴ Nitzescu was the first, however, to describe the intravenous use of paraldehyde alone, employing a 6-8 per cent solution of paraldehyde in isotonic (5.66 per cent) glucose on the basis of 0.15-0.21 cc. paraldehyde per kg. The complete glucose-paraldehyde solution was injected at the rate of 15-20 cc./min. A total of 137 cases have been reported by Nitzescu⁴⁹ and his colleagues with this technique used to provide basal anesthesia. In a few cases complete abdominal surgery was easily performed

when doses of 0.2-0.4 cc. per kg. were injected.

A MUCH simpler and more widely used method has been the injection of undiluted paraldehyde as described so completely by Elliott and his coworkers.⁵ The drug is poured directly from the usual bottle into a sterile syringe and injected at the rate of 2 cc. per second until the entire calculated dose has been given. The ratio of 0.2 cc. paraldehyde per kg. is the basis for dosage. Bronchial spasm and cough regularly appear in about 5 seconds and disappear in a few more seconds when anesthesia arrives. The patient occasionally recalls a short coughing spell. Excitement is absent if the injection is rapid; analgesia is complete; anesthesia is complete for 5 to 10 minutes. The dose has varied from 5 to 19 cc. The anesthesia may be prolonged by 50 per cent by injecting one-half the original dose within 3-4 minutes of the first injection. Elliott *et al.* have observed no pulmonary irritation of clinical significance even in patients with a "cold" or pulmonary tuberculosis. All types of poor risk patients were subjected to intravenous paraldehyde anesthesia without ill effect. Elliott's 55 cases as well as all those reported in the literature covered and the present writer's 18 cases showed no untoward complication, and confirm the harmlessness and value of the direct injection of moderate doses of paraldehyde intravenously for short anesthesia. The margin of safety is undoubtedly adequate provided the anesthesia is light, short and confined to the indications set for intravenous anesthesia in general.

The non-surgical use of paraldehyde has been found to be advantageous in the control of pain of coronary occlusion (using 5 cc.) and the severe headache of hypertension (10 cc.) unrelieved by routine methods.⁶ It has stopped convulsions in 47 cases of eclampsia (1-3 cc. i.v.),⁷ the terminal convulsions of severe hypertension (8 cc. intragluteally),⁶ and the convulsions of tetanus using the method of Noel and Souttar.⁵⁰ It has put to sleep patients with alcoholic and nonalcoholic

psychoses displaying maniacal activity (8 cc. i.m. or i.v.).⁶ In all of the above cases and in the writer's personal use the method of Elliott, using undiluted paraldehyde, has been preferred.

OF the untoward effects of paraldehyde the author has been able to find only three instances, two in the literature⁴⁷ and one personally communicated. In all, the paraldehyde was administered by mouth or rectum to patients who were under the simultaneous influence of other drugs of the depressant group. The doses reported in these cases were no larger than the usual ones and the untoward effects were attributed, probably incorrectly, to idiosyncrasy. The two deaths and one near-fatality are more probably attributable to additive effects of poor general condition, paraldehyde, and one or more other depressant drugs used just prior to the enteral use of paraldehyde. No complication of intravenous paraldehyde anesthesia or analgesia is known to the writer.

The discovery and development of rectal avertin, ether-in-oil, and intravenous barbiturates of very short action have caused intravenous (as well as rectal) paraldehyde to be relegated to the limbo. This should not be entirely so, especially for the anesthetist. There have been many episodes when the above knowledge has proved worth remembering. But all circumstances being equal, the modern intravenous barbiturate anesthetics are superior to paraldehyde because the former drugs are more controllable; do not cause coughing during induction; do not produce breath odor unpleasant to others, and do not leave the patient stupefied for as long a postoperative period as does intravenous paraldehyde. On the other hand, paraldehyde is always readily available, may be prepared simply by just aspirating it from the bottle, and injected quickly in moderate doses without fear of respiratory depression. Therefore its use may be valuable under certain circumstances in the operating room and for the control of severe pain, convulsions or mania in the ward or at the bedside.

Intravenous Analgesia With Morphine

EVER since Friedrich Sertürner isolated morphine in 1806 this drug has been the analgesic of choice; and ever since then it has been the custom to administer it by mouth or subcutaneous injection. Two disadvantages are frequently noted, however, when it is used by either of these two routes. First, there is the delay in arrival of analgesia, usually 20-30 minutes after subcutaneous injection, assuming that the first dose injected by hypodermic is adequate, which it frequently is not. Secondly, vomiting or nausea is often induced prior to the onset of analgesia. These disadvantages are especially undesirable in the face of a painful emergency such as biliary colic, coronary occlusion, etc., when the agony is intense, the patient is already nauseated or vomiting, and minutes are like hours to patient, physician and bystanders.

The intravenous administration of morphine sulfate minimizes these difficulties. Analgesia is secured within 2 to 5 minutes, the minimal effective dose is all that is injected, and vomiting is less frequent because the vomiting center is depressed more rapidly. The simplicity and safety of this route has been demonstrated by the extensive experience of Betlach and Lundy⁵¹ in their use of it in anesthesia. They have applied this method as an adjunct of local and regional anesthesia, e.g., to prolong a waning spinal anesthesia, to supplement sacral and cervical blocks, and to increase analgesia in peroral endoscopy. For bronchoscopy and gastroscopy morphine was administered intravenously more than 600 times in one year. It has been used in this way for preanesthetic medication in emergency operations or when the regular dose of morphine has been forgotten or underestimated. A hypodermic administration of morphine just prior to the start of an anesthesia is prone to complicate the smoothness of the anesthesia by producing the maximum morphine effect on respiration and metabolism 30 to 60 minutes after the start of the anesthesia. Sudden respiratory depression is avoided by securing the maximum morphine effect within a few minutes by intravenous in-

jection.

The use of intravenous morphine for relief of painful symptoms of disease was first reported in the literature of this country by Moses Salzer⁵², of Cincinnati, an internist with an extensive anesthetic experience. He employed it for analgesia of biliary and renal colic, angina pectoris and coronary thrombosis, and for the relief of the distress and dyspnea of congestive heart failure.

A. A. Zierold⁵³ has described the use of morphine sulfate in 150 cases as an aid in the diagnosis of the acute abdomen by utilizing the specific tendency of morphine to increase the spinal reflexes and the involuntary rigidity of affected segments of abdominal musculature while, at the same time, allaying voluntary spasm. If one should desire to inject morphine for this purpose, the intravenous route is the most desirable because of the rapidity of effect and the accurate regulation of dosage.

THE technique of injection as described by Betlach and slightly modified by the writer is as follows: Morphine sulfate, either as hypo tablet or solution, is mixed with distilled water or normal saline and the resulting solution made sterile. The morphine sulfate dose is gr. $\frac{1}{4}$ and the total final volume is 2 cc. The usual maximum dose is gr. $\frac{1}{4}$ although Salzer has safely used gr. $\frac{3}{8}$. The syringe should be of 2 cc. capacity and marked to allow the accurate injection of tenths of a cc. The needle may be hypodermic size but 20-22 gauge is more satisfactory. The intravenous injection must be slow; the optimum rate is 0.1 cc. per 10 seconds. About 0.33 cc. of solution or $\frac{1}{24}$ gr. is injected and then a pause of 30 seconds is allowed to elapse to permit the appearance of any idiosyncrasy or allergy to morphine. If no serious symptoms or signs are noted then continue to inject the solution 0.1 cc. per 10-15 seconds until the desired analgesia is secured. The dose has varied from $\frac{1}{24}$ to $\frac{1}{4}$ gr. in the experience of the writer and that of Betlach. While the immediate analgesic effect of intravenous injection is more pronounced the duration of analgesia is about as long as after subcutaneous injection. The subjective sensa-

tions may be dizziness, tachycardia, tinnitus and a general feeling of warmth. Fainting occurred once in Betlach's experience. This as well as all other unpleasant reactions may be minimized by avoiding rapid injection.

Excessive depression of respiration and circulation has not been reported by the others who have used intravenous morphine and has not been seen by the writer, but it is a possibility that must be considered if the subject is a poor risk or is already partly under the influence of other depressant drugs or if the injection is too rapid. The chief sign of overdosage is slowing of respiration and cyanosis. The therapy of morphine poisoning is substantially the same as that outlined for barbiturate overdosage (q.v.).

The value and safety of intravenous morphine sulfate as an analgesic in anesthetic and general medical practice have been confirmed by the writer and his colleagues in over 100 cases. This technique deserves more widespread use by physicians at the bedside and in the operating room.

Conclusions and Summary

1. The unfortunately low standard of training in anesthesiology possessed by most physicians and surgeons has retarded the intravenous use of depressant drugs even when specifically indicated, i.e., for the prompt relief of intense pain, the convulsive state and maniacal activity.

2. The background of pharmacology and the knowledge of anesthesiology necessary for the safe administration of these potent agents have been outlined.

3. The clinical use of the barbiturates, paraldehyde and morphine by the intravenous route has been reviewed and described in detail.

4. The basic rules of safe usage of intravenous depressants are (a) slow measured rates of injection, (b) the use of anesthetic signs, and not body weight, as the guide for dosage, (c) correct choice of patient, (d) maintenance of a clear airway and adequate oxygenation, (e) preparedness for reversal of the anesthetic state.

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MENTAL HYGIENE NOTES

Complaint Problem

REFEREE of the State Department of Labor (Workmen's Compensation) referred patient for examination to establish diagnosis and any causal relationship between present condition and the accident.

Claimant states that he is suffering from weakness of the left arm; awful pains in back of neck. These are at times so severe that he cannot stand it. Occasionally the pain radiates to the top of head; when he turns his head it feels like something scraping it there. Moreover, he states he frequently has fainting spells, at which time he claims to be unconscious; can't hear what goes on about him until he begins to come out of it. These spells last one to two minutes. Moreover, he states he can feel when a spell is coming on because he experiences premonitory dizzy sensations before spells.

At these times he states he tries to go off by himself in order to spare his wife worry.

According to patient, and also his wife, it was ascertained that patient was in his usual health until Wednesday, December 30, 1936, when he accidentally tripped over a half brick which caused him to fall over a barrel, landing on the back of head and left shoulder. Patient states

that at this time he became unconscious and may have remained so for two or three minutes. It is important to note, however, that patient recalls clearly everything that happened up to and including the various facts and factors entering into the accident which took place while he was wheeling a wheelbarrow full of bricks while on his job—employed as a laborer for the past sixteen years.

CASE NOTES IN EXTRA- MURAL PSYCHIATRY

Case XIII

**Traumatic Psychoneurosis,
Hysterical Type, in a Forty-
Four-Year-Old White Male**

**FREDERICK L. PATRY, M.D.
Albany, New York**

FOLLOWING the accident he was brought home by his boss in his car, arriving about 8:30 A.M. At that time patient's wife states that the left side of his neck was swollen "through the cord." Patient recognized his wife, told her how he got hurt, and not to be frightened as the family physician had previously been 'phoned and was coming. Patient sat in his chair at home until the doctor arrived an hour

later.

Following examination he was brought to a hospital for x-rays (negative). He showed no difficulty in walking at this time. On returning from the hospital his neck was bandaged. He also complained of pain for which he was given pills. Patient states that the doctor told him to relax as much as possible and to lie down whenever he felt like it. Patient states he

could not walk much because of pain in the back of head. This was especially so when his feet touched the floor. At times the pain was so bad that he would have to lie down. Nevertheless, he ate well and his weight has continued practically the same for the past five years. The first night or so his sleep was disturbed and it is said he would groan or moan. His wife was over-anxious about his condition and states she would stay awake at night listening to his breathing. "I was scared something might happen to him because of the swelling in the left cord of his neck" (wife). His doctor stated that he would be all right but he did not know how long it would take.

The next day patient complained of being "full of pain." He was in no condition to work although he was up. In general he was worse than the day before. He relaxed as much as possible and stayed in the house. The doctor came several times each week. Sleep gradually improved. Patient had never done any reading to speak of nor had he the newspaper habit. The following day he continued to remain in the house and this was the custom until some three or four weeks later when he began seeing the doctor at his office. He would be brought there in a car by relatives or friends, where he received electric treatment (ultraviolet ray). Patient states that helped only during the time of application, the next day feeling the head pain as usual. There was also massage to reduce swelling of left cord of neck. Whereas wife states that she does not know if the swelling went back to normal, patient states that after five months the swelling did return to normal. Wife states that at times the swelling increases and causes pain. At times he can sit quiet and fight it off and prevent a fainting spell; at other times he falls in a fainting spell.

THE first fainting spell occurred in June, 1937, while in the yard of his home. According to wife he stepped on the stoop and as he did so pain increased in the back of neck. "He just got to the chair in time or he would have fallen

on his face" (wife). However, he sat in the chair and "fainted away." Patient's son came screaming, saying, "Dad has fainted." Wife put wet cloth on his forehead and sent for the doctor. She thinks he was unconscious for about a minute before he gradually came out. Each time patient has had a spell he has been brought out of it by his wife by application of cold cloths and rubbing of the pulse. In two or three minutes he would be in his usual condition. Each time patient would know that he had had a spell. At no time has he fallen on the floor or ground or hurt himself. Only once did he come pretty near to it. At that time, December 15, 1939, a male friend was visiting. Claimant thought he was going to have a spell and evidently got so wobbly that his friend had to hold him up until a chair was placed under him. The doctor called and said his pulse was weak but that it would be all right. Wife and patient stated that these spells, according to the doctor, were due to the accident.

THE course of present illness has been one of no improvement or change except that fainting spells have been increasing in frequency. Wife states that if he has no pain for three to seven days he may not have spells. These latter average two a week. At no time, however, is he without pain although the intensity varies. At times he awakens with pain. This is relieved by pills which he takes every three or five hours or somewhat less, depending upon intensity of pain. At no time has patient lost sphincter control of urinary bladder or bowels and at no time has he bit his lips or cheeks.

Since the last hearing, December 5, 1939, wife stated that referee suggested that electrical treatments be stopped for a while. This has not affected patient adversely except that there was some comfort during the immediate time of application of treatment. Since date of accident he has continuously received compensation of eight dollars a week. During this interim there have been hearings every four to six months.

Patient's daily routine is occupied most-

ly by spending the time in the house or walking about. When the weather is good he may go for a walk with his wife or son to the doctor's. He never goes anywhere alone.

There has been no change in his sexual habits since the accident. Coitus on average of once a month, which was the usual frequency before the accident. Both patient and his wife state that patient has experienced weakness of left arm, loss of hearing in left ear, and that two years ago glasses were prescribed which help vision of left eye.

Bowels regular. Spirits show no gross defects although he gets discouraged at times because he does not work as usual. His plans are to get well and return to work if he is able.

Personal History

YOUNGEST of twelve children. Development normal. Personality is described by wife as good natured. Reached seventh grade in school, following which he worked as a laborer.

Married twenty years ago. Only one child, a boy aged sixteen who is in good health and is in third year of high school. Patient lives with his wife and son in a two-family house. Patient states that he was in the United States Army for nineteen months, seeing service in France where he was a sergeant in the infantry conveying prisoners in line. He was never wounded and never saw front-line service. Discharged physically and mentally fit.

Family History

FATHER died aged 69 of "stroke." Worked in ice house. Mother died at age 54 also of a "stroke." There are five brothers and six sisters, all well. It is significant to note that a married brother, 49, was hurt in a brickyard in the summer of 1939, at which time he fell head first from a height. He was said to have been unconscious. Treated at home. Within five weeks he was back to work of a relatively lighter nature. He has received no compensation since returning to work. It is said his head bothers him a lot but he

prefers to work, provided he can get lighter work such as his present job of flagging trucks.

Physical and Neurological Examination

A LARGE, heavy framed, obese white male apparently 44 years of age. Pyknic habitus. Medium complexion. Blue eyes. Height 69 inches. Weight 170 1/4 pounds. Blood pressure 150/100. Pulse 132, regular, good quality. Tonsils slightly enlarged and pitted. No scars on tongue, lips, or cheeks.

Cranial Nerves

SMELL normal. Pupils equal, central, and circular; react to light and accommodation. Vision subjectively impaired left side. No gross defects in visual fields. Fundi negative. Wears glasses. III, IV, and VI negative. V negative. VII negative. VIII, hearing to watch tick said to be less left side. Rinne test normal both sides. No past pointing. IX, X, and XI negative except that patient does not raise left shoulder as high as right when commanded to do so. Head is turned somewhat to right side. Patient does not show the same active resistance when asked to turn head to left side as he does when asked to turn head to right side. XII normal.

Motor

COARSE tremor of fingers and tongue. Weakness of left shoulder and left arm. Head slightly tilted to right side. Voluntary movements slow and restricted. No abnormal swelling noted in neck. No atrophy or fibrillations. Right hand grip stronger than left. Gait normal. No ataxia. Normal swinging movements of both arms in walking. Muscle tone good. Speech normal. No loss of sphincter control.

Sensory

NO loss of deep or superficial sensibility except for a definite hemihypoesthesia and hemihypoalgesia of left side from head down through neck and left shoulder and arm. He perceives touch, pin

prick, and temperature variations on both sides but somewhat less on the left in the foregoing regions. There is definite hyper-suggestibility with respect to hypoaesthesia and hypoaesthesia, for example, typical glove distribution of left hand and wrist. Patient is able to identify different blocks representing letters of the alphabet with both hands although much slower with left hand. No loss of sense of position or vibratory sense. No tenderness of spine, muscles, or nerves. No objectively determined pain or hyperesthesia.

Reflexes

TENDON reflexes all active and equal. No clonus. No Hoffmann. There is typical astasia-abasia at times which is promptly improved upon suggestion.

Mental Examination

SOMEWHAT emotionally and socially immature personality of laborer-level intelligence. Preoccupied and tense. No gross mood disturbance. No hallucinations or delusions. Able to give a clear account of his accident: "I tripped over half a brick and over a barrel. That's all I know. I was knocked out about five minutes. I hit back of head and left shoulder. I was taken home and knew all what happened while I tripped over the barrel and after I came to. My head was thick for two or three days afterward. The back of my neck was all swollen. The left cord was big as index finger for five months. My head was all taped up for a year." Patient stated that a doctor two years ago told him to go home and take bromides.

Diagnostic Formulation

TRAUMATIC psychoneurosis of hysterical type.

It is my opinion that claimant's present condition has been caused by the accident of December 30, 1936; also that claimant is temporarily totally disabled. This is an unconscious defense mechanism and reaction in the setting of a critical situation of impending fear of harm associated with head and shoulder trauma. The term "traumatic neurosis" is somewhat unfor-

tunate chiefly because trauma, although associated with the condition, is not the essential cause. Rather is it a trigger in the critical reaction to a physical reversal in which unconsciously determined wishes take possession of the person's motivations in order to get something he desires and feels unable to obtain by the adult healthy modes of attaining them. Claimant is not malingering (conscious and purposeful attempt to deceive). He is fully convinced in his own mind of the genuineness of his complaint and this is abetted by an over-anxious and fearful wife who has been over-solicitous to his every symptom. This type of reaction seems to occur in susceptible individuals who seem to have certain personality traits making them liable to regressive defense mechanisms. The neurosis apparently is bred in a setting of fear because of harm to the person, and this condition is fed by fear from within and in the social environment. In time it unconsciously develops, as its end, the getting for the patient of sympathy and security.

Prognosis

IN such a type of mental disability prognosis is poor without adequate psychotherapy. The sooner this is instituted the better are hopes for restoring his normal ways of living. This latter, in my opinion, is quite possible.

Treatment

KEEPING in mind the etiological factors at the root of this reaction type, it is important that the patient be not unjustly accused of anything smacking of cupidity, as this only brings from him and others a resentful denial. The aim of psychotherapy is to win patient over by means of developing a positive transference or rapport so that he will abandon his unconscious wish to obtain sympathy and security in sick and infantile ways. Unless the patient's confidence can be won, it is useless to hope for cooperation on his part. It may be possible to clear up his mental disability in a short period of time by means of simple and frank ex-

planations which may serve to dispel the symptoms. However, in view of the long duration of this illness, it is quite probable that a long-range period of intense psychotherapy will be necessary to bring to recognition his false unconscious strategies and techniques for meeting the traumatic experience. Patient should be frequently reassured that the present disability is not of an organic nature. He must rigidly and consistently ignore these pseudo-losses of function such as muscular weakness and "body protests" such as pain in the head. This can be furthered by sitting down with him in a friendly manner and formulating a 24-hour schedule of constructive interests and activities which in time may gradually crowd out his regressive sick ways of gaining sympathy and security, and at the same time further growth in regaining ego satisfactions in adult ways. Electrical treatments and the prescribing of medicines for pain, and the showing of over-concern on the part of wife and son and others are all contraindicated, as they tend to feed an unconsciously determined false idea or wish for an organic basis of his disability. Gradually he should be encouraged in regaining a normal socialized way of living and to give up his false prop of dependence upon his wife and son when

he goes out for exercise or for other purposes.

FROM the standpoint of *prevention* (and it is here that there is much room for improvement in many cases of "compensation neurosis") it is important that a definite time be set by the attending physician indicating when recovery will take place and when he will return to work. Apropos of this case, it is significant to see the relatively prompt recovery of his brother after sustaining a head injury. It, among other things, indicates the positive value of returning claimant to work (even part-time or light work) as soon as possible; also of making a prompt financial settlement whenever justified. Obviously persons in a critical situation of heightened emotional stress are hypersuggestible and tend to grasp and use regressively hints spoken or implied relative to the differential diagnostic and prognostic possibilities. Golden silence should be practiced whenever reassurance of early recovery cannot be capitalized. Likewise, absence or a minimum of treatment tending to impress upon the patient an organic basis of his disability is important since false mental fixations may herein take tenacious root.

214 STATE STREET.



The Saratoga Spa

THE act creating the Saratoga Springs Authority authorized appointment of a State-wide Medical Advisory Committee to aid the Authority in developing medical policies. Forty-one officers of State, District, and County Medical Societies have accepted appointment to such a Committee.

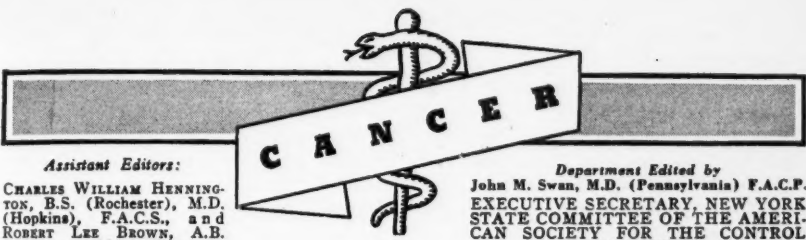
The Authority was host to this Advisory Committee in Saratoga Springs on May 23 and 24, 1940, with discussion of certain aspects of Spa work by the Medical Staff. Papers on Convalescence by Dr. E. H. L. Corwin, and on Arthritis by Dr. Russell

L. Cecil, were presented, with interesting round table conferences.

During their visit, Committee members took opportunity to inspect the Saratoga Spa and to scrutinize the methods of administering Saratoga Natural Mineral Water Baths and other treatments.

Subsequent regular meetings are to be arranged by an Executive Committee elected at the closing session.

This organization marks a further step in developing a sound medical program for the Saratoga Spa—a program which will lead to an even greater measure of co-operation with the medical profession.



CANCER

Assistant Editors:

CHARLES WILLIAM HENNINGTON, B.S. (Rochester), M.D. (Hopkins), F.A.C.S., and ROBERT LEE BROWN, A.B. (Michigan), M.D. (Harvard).

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John M. Swan, M.D. (Pennsylvania) F.A.C.P. EXECUTIVE SECRETARY, NEW YORK STATE COMMITTEE OF THE AMERICAN SOCIETY FOR THE CONTROL OF CANCER

AT the request of the New York State Committee of the American Society for the Control of Cancer, the Onondaga County Committee during 1939 made a survey of the cases of cancer treated in the University Hospital, Syracuse, in order to continue the endeavor to show that it is possible to treat patients in their own communities and to obtain five year survivals.

During the year 1930, 103 patients were admitted to the wards of the hospital with varying forms of cancer, as follows: Four cases of cancer of the *Bladder*. Two treated with suprapubic application of radium, one with suprapubic application of diathermy, and one inoperable case. All four are dead; three within one year, and the inoperable case during the fifth year.

Twenty-five cases of cancer of the *Breast*: Fourteen of these patients were treated with radical breast amputation. Nine were living without recurrence at the end of the five year period. In six cases simple mastectomy was done, three of which were living without recurrence at the end of five years. In two cases the tumor was excised and both patients were living at

the end of the five year period. In two no treatment was employed. One of these patients was living at the end of the five year period.

Nine cases of cancer of the *Cervix*: One patient was living five years after supravaginal hysterectomy and two after treatment with x-irradiation and radium. The six other patients died before the end of five years.

Thirty-seven cases of cancer of the *Gastro-intestinal Tract* as follows: Ascending colon, 1; cecum, 1; esophagus, 2; gallbladder, 1; liver, 2; pancreas, 2; duodenum, 1; rectum, 7; sigmoid, 3; stomach, 10; general abdominal carcinomas, 7. Of the last group there were three cases of adeno-

carcinoma and two of lymphosarcoma. The histology of one was not recorded. All of these patients died before the expiration of five years.

One patient with papillary adenocarcinoma of the *Kidney* died after nephrectomy and one patient with carcinoma of the *Larynx* died within five years. One patient with epithelioma of the *Lip*, one with cancer of the *Neck*; two with cancer of the *Ovary*; two with cancer of the *Pelvic Organs* (excluding uterus and ovary); one

FIVE-YEAR SURVIVALS OF CANCER IN A GENERAL HOSPITAL

ROBERT J. McGUIRE,
M.D., F.A.C.S.
Syracuse, N. Y.

with cancer of the *Throat*; two with cancer of the *Tonsil*; one with cancer of the *Urethra* (male); and two with cancer of the *Vulva* died before the end of the five year period.

Nine cases of cancer of the fundus of the *Uterus*: Four of the patients died before the end of the five year period after treatment with curettage and radium, and one after supravaginal hysterectomy. Three of the patients lived five years without re-

currence; two after panhysterectomy, and one after vaginal hysterectomy. One patient treated with curettage and radium is living with recurrence.

Five cases of miscellaneous malignancies: Two cases of cancer of the *Axillary Lymph-nodes*, one case of cancer of the *Mediastinum*, one of cancer of the *Temporal Bone*, and one with cancer of the *Lumbar Vertebra*. All of these patients died before the end of the five year period.

Summary

OF 103 patients admitted to the University Hospital, Syracuse, twenty-one survived five years without recurrence: fifteen of the breast, three of the cervix, and three of the fundus of the uterus (20.38 per cent). Twelve of the patients were alive at the end of eight years (11.65 per cent).

Serologic Tests for Syphilis

MORE than five years ago the Committee on Evaluation of Serodiagnostic Tests for Syphilis, in cooperation with the United States Public Health Service, conducted a study to evaluate original serologic tests for syphilis or modifications thereof in the United States. The results of this study were published shortly after the investigation was completed.

Consideration is now being given by the Committee to the organization of a second evaluation study of original serologic tests for syphilis or modifications thereof within the next year. If the need for an investigation of this kind seems to justify the cost, invitations will be extended to the authors of such serologic tests who reside in the United States, or who may be able to participate by the designation of a serologist who will represent them in this country. The second evaluation study will be conducted utilizing methods comparable to those employed in the first study.

Serologists who have an original sero-

This showing may seem hopeless, but it must be pointed out that nearly 80.0 per cent of the patients were hopelessly diseased when admitted to the hospital. The fact that there were 20.0 per cent survivals is a challenge to us to make diagnoses when there is some hope of cure.

Note.—This study of the Five Year Survivals of Patients Treated for Cancer in the University Hospital, Syracuse, was completed by Dr. McGuire just before his untimely death.—Editor.

logic test for syphilis or an original modification thereof and who desire to participate in the second evaluation study should submit their applications not later than October 1, 1940. The applications must be accompanied by a complete description of the technic of the author's serologic test or modification. All correspondence should be directed to the Surgeon General, United States Public Health Service, Washington, D. C.

Venereal Disease Pamphlets

THE Bureau of Social Hygiene of the New York City Health Department announces publication of three new pamphlets for the medical profession:

"The Diagnosis and Management of Congenital Syphilis"; "The Golden Opportunity—Primary Syphilis"; and "Quiz Compend."

These and other pamphlets for the physician-in-practice may be obtained by writing to the Bureau, room 329, 125 Worth St., N. Y. C.



CONTEMPORARY PROGRESS

The Effect of Subcastrative Roentgen Therapy on Ovarian Physiology

J. ROCK and his associates at the Free Hospital for Women, Brookline, Mass. (*Surgery, Gynecology and Obstetrics*, 70: 903, May 1940) present a study of 27 cases of menstrual abnormality with or without associated sterility; endometrial biopsies were made in these cases to determine whether the flow was of the ovulatory or non-ovulatory type. In 22 of these cases the flow was shown to be anovulatory or with infrequent ovulatory cycles, as shown by the absence of progestin effect on the endometrium. There were 22 cases treated by subcastrative doses of Roentgen rays; of these 12, or 54.5 per cent., had three or more ovulatory cycles following treatment and 3 have become pregnant within a short time after treatment. In 5 cases with sterility, dysmenorrhea, profuse or too frequent menstruation, but with normal ovulatory cycles as shown by the endometrial biopsies, no relief of symptoms was obtained by similar Roentgen-ray treatment. The authors are of the opinion that subcastrative Roentgen-ray therapy of sterility and menstrual disorders is indicated only in those cases in which there is definite evidence that the patient habitually fails to ovulate. In women under thirty-five years of age, three treatments of 50 to 60 r's each over the ovaries appear to be harmless; but in older women this dosage may cause temporary or permanent cessation of follicular activity with the appearance of menopausal symptoms. The good results obtained with subcastra-

tive Roentgen-ray therapy in cases with anovulatory cycles are attributed to the destruction of persisting mature follicles by the x-rays, "thus allowing a new cycle of follicle development and maturation to take place."



GYNECOLOGY

COMMENT

That small subcastrative doses of Roentgen rays is beneficial in the anovulatory or infrequent ovulatory types of sterility there can be no doubt. Likewise in certain types of dysmenorrhea and menorrhagia it is of distinct value.

However, we have been somewhat fearful of the use of x-rays in sterility cases since we feel sure that a certain small proportion of women are especially sensitive to x-irradiation and unless a much smaller dose than is usually recommended is employed one is taking some chance of causing temporary or even permanent cessation of follicular activity. Therefore, at the moment, your commentator prefers using the gonad-stimulating action of pregnant mare's serum hormone for the anovulatory types of sterility. We are much more apt to use x-irradiation for other types of menstrual abnormality, particularly in older women exhibiting menorrhagia and/or metrorrhagia. Even in such cases we would not recommend the x-ray until all other measures had failed.

If you elect to use Roentgen therapy be sure of the "dosage" used. "A law suit for castration" is very harassing.

H.B.M.

The Treatment of Endocervicitis with Carbon Dioxide Snow (Dry Ice)

G. WEITZNER (*American Journal of Surgery*, 48:620, June 1940) reports the use of carbon dioxide snow in the treatment of endocervicitis. The cervix is inspected and measured with the patient in the lithotomy position. A rod of the shape

and size to fit the cervix is cut from the "ice" brick, using a large kitchen knife which is warmed by dipping it into hot water. This rod is introduced into the cervix with the uterine dressing forceps; considerable pressure is employed during this process. Care is taken not to touch the vulva or vagina with the ice. As soon as the ice touches the cervix, it vaporizes rapidly, filling the vagina with a gray gas. This may be blown away and the process of freezing the cervix observed. The application is completed in 60 to 90 seconds. It causes little or no pain, and no anesthetic is required. Slight bleeding should occur following the treatment. Treatment may be repeated, but not oftener than once in four weeks. The leukorrhea ceases completely for twenty-four hours, then reappears, becoming more watery and slowly diminishing. Cure may be complete within five to eight weeks, as shown by the cessation of leukorrhea, relief of subjective symptoms, and the normal appearance of the cervix. Biopsies of the cervix after treatment with dry ice show that in the process of healing, there is marked stimulation of the stratified squamous cells; atypical cells in atypical arrangement were observed in 30 per cent. of cases, but these sometimes disappeared within a few months and never showed characteristics of malignancy, in follow-up examinations of over two years in some instances. The gross appearance of the cervix in these cases was smooth and normal. Of 325 patients with endo-

cervicitis treated with carbon dioxide snow, 70 per cent. required only one "ice treatment" for a cure; the others two or more treatments; the best results were obtained in cases with cervical erosions. All of these patients were treated in 1934 and 1935, and have been followed up for at least two and a half years. In no case has there been any undesirable sequela, neither inflammation nor stenosis of the cervix.

COMMENT

Your commentar-
ior has had no ex-
perience with the
treatment of chronic
endocervicitis with
carbon dioxide
snow. He has had
a limited experience
with its use in other
pathological lesions.
However, since there
are several methods
(cautery, conization,
etc.) that have been
proven, without
doubt, to be highly
efficacious he would
hesitate to adopt the
"dry ice" method as
a routine. In the
first place "dry ice"
may not be easily
obtained and kept
on hand whereas
most physicians regu-
larly employ the
cautery or other
electrical modalities
in their routine of-
fice work and hence
they are always
readily available.
Again, although the
author had no com-
plications, in the hands of those less experi-
enced we feel sure that such good results
would not be the rule. "Dry ice" is a
treacherous, although quite an efficacious
therapeutic agent where indicated. But
meticulous care and considerable experience
are required for its successful use.

H.B.M.

Intermenstrual Pain—A Surgical Condition

E. F. McLAUGHLIN (*American Journal of Obstetrics and Gynecology*, 39:684, April 1940) considers that intermenstrual pain, occurring midway be-

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tween menstrual periods or in the latter half of the menstrual cycle, is always abnormal; he believes it to be due to rupture of small ovarian cysts or hemorrhage into such cysts. When the intermenstrual pain is so severe that the patient consults a physician, it becomes a surgical problem, because "it calls for differentiation" from other conditions with similar signs and symptoms in which operation is definitely indicated. In 57 cases with a severe attack of intermenstrual pain, 12 did not come to operation, 22 showed intracystic hemorrhage and 23 ruptured cysts. The onset of pain was at the time of ovulation or shortly thereafter—on an average, 16.6 days after the beginning of the last menstrual period. In the group with intracystic hemorrhage, the symptoms occurred 19.7 days after the last menstrual period, and in the rupture group, 16.1 days after the last period. This would suggest that the hemorrhagic cysts were of corpus luteum origin, which proved to be true in the majority of instances; in 16 cases the cyst was of corpus luteum origin, in one of follicle and corpus luteum origin; in 4 cases the origin was undetermined, and only one was a follicular cyst. In the ruptured cyst group, 11 were corpus luteum cysts, 10 follicle cysts, one of mixed origin, and one of undetermined origin. Nausea accompanied the pain in 42 per cent., but vomiting in only 15.8 per cent.; both nausea and vomiting occurred more frequently in the ruptured cyst group than in the hemorrhagic group. A bloody or brownish discharge followed the pain in 8 cases. The pain was most frequently localized on the right side—in 29 of the whole series of 57 cases; and right-sided tenderness was even more frequent, occurring in 40 cases. Thus it is natural that this condition should be incorrectly diagnosed as appendicitis; this error in diagnosis was made in 36.8 per cent. of the entire group, and in 44.4 per cent. of those operated on. Previous attacks had occurred in 28 cases; there was a history of menstrual irregularities in only 6 cases. The average figures for temperature, pulse rate, white blood cell count and differential count were "strikingly normal" in this

series of cases; this finding is of aid in differentiating hemorrhagic or ruptured ovarian cyst from pelvic inflammatory disease and from appendicitis. In the cases operated, removal of the cyst with closure of the defect was done in 24 cases; the ovary was removed with or without the tube in 21 cases. "The principal lesson" from this study is that "rupturing follicles or corpora lutea and intracystic hemorrhage do occur and may simulate acute or chronic surgical conditions of the abdomen." This possibility should be kept in mind in patients with intermenstrual pain, as a correct diagnosis may be reached and operation may be avoided. The possibility of recurrent attacks should be considered, as these cases represent "a recurring dysfunction of the ovary."

COMMENT

Intermenstrual pain—"mittelschmerz"—certainly is not always a surgical condition. Even when the pain is severe enough to cause the patient to seek medical advice it still may not be surgical. Indeed, if one could make the differential diagnosis—and we think it usually can be made—the conditions causing true intermenstrual pain are very rarely surgical. During 20 years experience, I have seen many, many cases of "mittelschmerz" but have operated upon only 3 or 4 such cases. The diagnosis in each of these cases, except one, was tubal pregnancy—ruptured or unruptured. On the other hand, I'm sure I have been instrumental in keeping many such cases from being operated upon. The general surgeon is the most common offender in treating many such cases surgically. A correct diagnosis is still a most important surgical desideratum—or medical. We should all aim at better diagnoses.

H.B.M.

Cancer and Fibromyomas of the Uterus

D. D. BOWERS (*American Journal of Obstetrics and Gynecology*, 39:830, May 1940) presents an analysis of the clinical and pathological records of 476 cases of uterine fibromyoma and 172 cases of malignant uterine tumor. Gross and microscopic examination of the uterus and tubes was made in 448 of the cases of uterine fibromyoma. Pathological lesions were found in the adnexa in 86.4 per cent., chiefly salpingo-oophoritis and salpingitis; ovarian cystic disease was present in only 20 per cent. Proliferative intrauterine

lesions were found in 28 per cent. of these cases of fibromyoma with associated adnexal disease, and in the same percentage of the cases without adnexal disease. In the entire series of 476 cases of uterine fibromyoma, endometrial hyperplasia was found in 11 per cent., endometrial polyps in 7.7 per cent., glandular hypertrophy of the endometrium in 5 per cent. If endometrial hyperplasia is an index of increased estrin secretion, the low incidence of hyperplasia in cases of uterine fibroids in this series would indicate that the hormonal factor is not the chief etiological agent in the production of fibroids. In 20 cases of uterine fibromyoma (not included in the series of 476 cases), there was an associated malignant tumor in 20 cases; in 5 the carcinoma was in the uterine corpus, and in 13 in the cervix; in 2 cases the uterine tumor was a sarcoma. The 172 cases of malignant tumor of the uterus analyzed include these 20 cases in which there was also a fibromyoma. The incidence of cervical cancer in this series of fibromyomas is relatively high. In 117 of the cases of cervical cancer, diagnosis was made by biopsy alone; if uterine specimens had been available, the incidence of an associated fibromyoma might have been higher. These findings show the necessity for thorough pre-operative examination in every case of uterine fibroids, as the presence of fibroids may overshadow an associated malignant lesion. In 8 of the cases of uterine fibroids associated with carcinoma in this series, the cancer was recognized following operation; in 7 of these cancer was found in

the cervical stump following supravaginal hysterectomy; and in one case was found on pathological examination of the cervix after total hysterectomy. In an additional 5 cases in the series of malignant tumors, the cancer was found either in the cervical stump or on pathological examination after hysterectomy for other pelvic lesions. If supravaginal hysterectomy is to be done in cases of uterine fibroid or in other pelvic lesions, the treatment of non-malignant lesions of the cervix and biopsy to rule out the presence of malignancy are indicated. If fibroids are treated by irradiation, preliminary endometrial biopsy is a necessity.

COMMENT

Preoperative diagnosis is one of the most important phases of any surgical procedure. This is certainly true when dealing with new growths of the uterus, adnexa and cervix. The presence of cancer is always a possibility and since we have no specific cure for malignancy, we must diligently extend our efforts towards early recognition. Early cancer can be cured. Likewise prevention, so far as possible, of the future development of cancer must be practiced. Therefore, as the author has indicated, meticulous care must be taken to discover co-existing cancer and every precaution practiced to eliminate its future development in the management of fibromyomata of the uterus. To accomplish all this a thorough "work up" of each case (history, physical examination, biopsy of endometrium and/or cervix) must be practiced. This cannot be done if elective operations are performed within a few hours after admission to the hospital.

The day is long past when a patient with fibroids enters the hospital at 9 p.m. and is operated upon at 9 a.m.

H.B.M.



The Placenta in Toxemia of Pregnancy

B. TENNEY, JR. and F. PARKER, JR.
(*American Journal of Obstetrics and Gynecology*, 39:1000, June 1940)

report a study of the placenta in relation to the clinical symptoms in 100 cases of toxemia of pregnancy. In their previous studies of placental changes in the toxemia of pregnancy, the authors have found that the characteristic change indicative of toxemia is "a premature aging of the placenta." The full-term placenta normally shows some syncytial degeneration; this involves from 10 to 50 per cent. of the small terminal villi. In cases of toxemia the placenta at term shows a more extensive syncytial degeneration involving the majority of the

villi; in severe cases, all of the small terminal villi. In normal placentas at seven or eight months there is little or no syncytial degeneration; but in toxemia the placenta at this time shows 50 per cent. or more syncytial degeneration. The type of syncytial degeneration in the toxemic placenta is characteristic; beginning with the "clumping together and autolysis of the nuclei in the syncytial cytoplasm", the final stage is the disappearance of all nuclei from the syncytial layer, leaving the villus surrounded by a thin irregular layer of hyaline material. There is also a marked congestion of the villus blood vessels in toxemic cases not found in the normal placenta. In comparing the placental lesions with clinical findings in 100 cases, the authors find that the presence of albumin in the urine is most closely correlated with the placental findings. In the 60 cases showing definite placental lesions, albuminuria was noted clinically in 90 per cent.; in the 40 cases with beginning placental lesions, albuminuria was present in less than half. The correlation between blood pressure changes and edema and the toxemic placental lesions was not so close. In 60 cases classified in three groups by Weiss and Dexter, it was found that in 26 cases diagnosed as "toxemia without previous hypertension", the placenta was of the toxemic type in 82 per cent. The majority of the cases in which the placenta was normal were of the mild "borderline" type. In 17 cases of "toxemia with previous hypertension", the placenta showed toxemia lesions in 96 per cent. But in 16 cases of "previous hypertension uninfluenced by pregnancy", the placenta showed toxemic lesions in only 35 per cent., and these were of the early borderline type. The authors conclude that the placental lesion characteristic of toxemia occurs in cases with no previous hypertension or kidney disease, as well as in cases with previous renovascular disease. "Therefore toxemia is an entity in itself" which may or may not be superimposed on previous kidney damage.

COMMENT

As time goes on we are gradually compiling more and more data regarding the true

etiology of the toxemias of pregnancy. The pathology of the placenta in such cases is another step in this direction. While this procedure may seem to be attacking the problem "through the back door" it nevertheless gives some very important facts as to the extent, type and prognosis of the toxemias of pregnancy. Such studies should be encouraged.

H.B.M.

The Maintenance of Pregnancy in the Human After Removal of Both Ovaries

W. B. RUSS (*Annals of Surgery*, 111: 871, May 1940) notes that experimental work with various animal species has shown that the time after nidation in which the corpus luteum is indispensable for the maintenance of pregnancy varies with different species. The question has not been decided for the human race. Russ reports a case in which the right tube and ovary had been removed several years previously. When about two months pregnant the patient had an attack of severe pain in the left lower abdomen with nausea and vomiting. At operation the left tube and ovary showed beginning gangrene due to torsion and were removed; on section of the ovary the corpus luteum of pregnancy was seen. The uterus was "about the size of a two months' pregnancy." The patient made a good recovery. Progesterin (1 c.c.) was given every other day for several weeks—until the end of the fourth month of pregnancy; the patient often complained of dizziness and nausea after the injection; she was delivered of a normal child at term. This case is of interest because there is "a general impression" that abortion almost certainly results from the loss of both ovaries during the first three months of pregnancy. The author is "not sure" that it is necessary to give progesterin to balance the loss of the corpus luteum hormone in order to insure the continuation of pregnancy after removal of both ovaries. If it is necessary, the dosage must be more exactly determined. This case also shows that the pregnant woman is not necessarily a poor surgical risk for abdominal and pelvic operations. When operation is indicated during pregnancy, it should be done; "barring bad technic and infection, there is no reason

why a pregnant woman should be a bad risk."

COMMENT

The maintenance of pregnancy in the human after removal of both ovaries is indeed unusual. The fact that the successful outcome of such a case demonstrates that the pregnant state is no bar to any surgical operation is not remarkable. We have always felt that if an acute surgical condition arose in a pregnant woman "forget the pregnancy and perform the necessary operation" was the correct course to follow. A voluminous literature coupled with considerable personal experience leaves no doubt of the correctness of this statement.

H.B.M.

The Vaginal Smear as an Additional Factor in the Diagnosis of Incomplete Abortion

P. F. FLETCHER (*American Journal of Obstetrics and Gynecology*, 39:562, Apr. 1940) briefly reviews the history of the use of the vaginal smear in diagnosis, showing that it is now a recognized method of studying the cyclic changes in the female generative organs. The technique employed for vaginal smears for diagnosis of incomplete abortion follows in general that of Papanicolaou, with some modifications and simplification of the staining procedure. The technique of the method is described in detail. Vaginal smear changes during pregnancy and after delivery have been studied for comparison with those obtained in cases of incomplete abortion. In cases of proved incomplete abortion, the following characteristics of the vaginal epithelial smear were noted: 1. Superficial and intra-epithelial cells are present in relatively small numbers; they are about normal in size with small dark staining or pyknotic nuclei, although occasionally the relative increase in the size of the nucleus characteristic of pregnancy smears is noted; these cells are irregular in shape and may be fragmented, compressed or folded to a greater extent than in the menstrual smear, but to a less extent than in the early or late pregnancy smear; they resemble the superficial cells in postpartum smears most closely. 2. The outer basal or pavement cells are equally or more numerous than the superficial cells; the nucleus

is relatively large, takes a darker stain than the protoplasm, but not as dark as the nucleus of the superficial cells; the cytoplasm is clear with few if any granules; there may be cornification, but this is usually only partial. These cells are smaller than the superficial cells; they are described by Papanicolaou as found only in postpartum and postmenopausal smears. 3. Inner basal or germinative cells are present, although less numerous than the other two types; they are smaller than the outer basal type, round, oval or slightly irregular in shape; the cytoplasm stains light blue, the nucleus, which is larger, a darker blue. The two types of cells—outer basal and inner basal—are regarded by the author as typical of incomplete abortion. Their presence is explained by the fact that most patients with incomplete abortion do not seek medical advice for relatively long periods after the bleeding is first noted, so that the desquamative processes in the vaginal epithelium become more extensive. Mononuclear cells showing a peculiar type of degeneration, with fragmentation of the nuclei and vacuolization of the cytoplasm, are also characteristic of the vaginal smear of incomplete abortion. The method of making the vaginal smear has been simplified so as to render it practical for clinical use, and the author is of the opinion that the characteristic changes observed in the vaginal smears in incomplete abortion "may eventually be established as definite diagnostic signs" of this condition.

COMMENT

Any diagnostic method that can be carried out by the ordinary laboratory is worthy of consideration by the clinician. Your commentator has had no personal experience in the diagnosis of incomplete abortion by the characteristic cellular findings in the vaginal smear but certainly there is every reason to believe that such studies are of considerable value. There are well known and characteristic changes in the vaginal epithelium due to endocrine influences and these should "show up" in the presence of incomplete abortion.

A simplified method of making such smears coupled with the more widespread knowledge of their characteristic appearance should give us a valuable adjunct in the positive diagnosis of incomplete abortion.

H.B.M.

The Prothrombin Levels of Maternal and Cord Blood at Delivery

R. F. NORRIS and A. RUSH (*Surgery, Gynecology and Obstetrics*, 701006, June 1940) report the determination of the prothrombin values of the mother's blood and the umbilical cord blood in 50 mothers and 51 babies (one pair of identical twins) at the time of delivery. The prothrombin determinations were repeated on the maternal and infants' blood seven to fourteen days later for 32 mothers and 33 infants (including the twins). The Quick method of determining the prothrombin was employed. When undiluted plasma was used, the average prothrombin value of the mothers at delivery was 117 per cent of normal, and that of the cord blood 85 per cent of normal. When a 25 per cent dilution of the plasma was employed, the values were 140 per cent and 63 per cent of the normal respectively. In the cases in which determinations of prothrombin were made seven days or more after delivery the average values with undiluted plasma were 102 per cent for the mothers and 89 per cent for the infants; and with the 25 per cent dilution, 127 per cent and 82 per cent respectively. In 39 infants in which the average volume of packed erythrocytes was determined, the average value was 55 per cent, and in the respective mothers, 40 per cent. While there is a possibility of slight error in the Quick test, which the authors consider is least with the 25 per cent dilution of plasma, the values obtained in this series show a

very definite lowering of prothrombin values in newborn infants as compared with the values for their mothers. The values obtained at seven to fourteen day intervals after birth show only a slight increase in prothrombin in the infants. Since the volume of packed erythrocytes is definitely greater in the infants, the discrepancy between the prothrombin values of mother and child must be proportionately larger for whole blood than for plasma. None of the infants showed any tendency to bleed, however, and only 2 were definitely premature; in one of these premature infants the prothrombin level was high and in the other low. None of the mothers had received any vitamin K except in their normal diets and none of the infants were treated with vitamin K. The high prothrombin values of the mothers do not indicate that a vitamin K deficiency at term is usual.

COMMENT

This study tends to show that the administration of vitamin K per se to pregnant women in order to protect their offspring against pathological hemorrhage is not necessary, provided an adequate and well balanced diet is taken. This fact, of course, would not apply to those cases known to have hemorrhagic tendencies. Such cases should have the protective help of vitamin K during the prenatal period.

Nature's method of supplying the proper vitamins in adequate amounts—a balanced diet—is still the best. A slogan for pregnant women should be: "Eat properly"! The physician must furnish the dietary information.

H.B.M.



Otorhinologic Sequelae of Swimming

D. MEZZ (*Laryngoscope*, 50:479, May 1940) points out that swimming has been

widely popularized because of its very definite hygienic value. At the same time it has become evident to rhinologists and otologists that swimming and especially diving play an important etiological role in sinusitis and otitis media. A review of the literature shows that sinus and ear infections incurred during swimming and diving are frequently more severe and are attended by complications in a large percentage of cases. The entrance of water into the nasopharynx "disrupts" the normal

endonasal defense mechanism against infection by washing away the thin mucin film and impairing ciliary activity; there may also be direct mechanical trauma to ostia and mucosal linings by the forcible inrush of water. In addition micro-organisms are washed from the lower airways to the sinuses or Eustachian tubes that normally have little defense against infection. The studies of H. Marshall Taylor have shown that while diving animals (mammals) possess "a complicated sphincter-like musculature which shuts the nostrils tight during the submersion of the head," man possesses only "a small decadent muscle"—the compressor narium, and cannot "close his nostrils reflexly or voluntarily" to prevent the entrance of water into the nose when the head is under water. The author's own experiments with expert swimmers and divers have convinced him that there is no method of breathing that prevents the entrance of water into the nose during swimming and diving. Feet-first diving, repeated diving and backstroke swimming result in the most marked damage to the nasal mucosa by water. There are a number of predisposing factors that favor the development of infection in the nasopharynx, sinuses and ear in swimming and diving—overcrowded swimming pools with a resulting high bacterial content of the water; over-chlorinated pools causing irritation of the nasal mucosa; active respiratory infection in the swimmers; and too prolonged exposure in cold water. The author has devised a rubberized, spring-steel nose clip constructed so as to "conform to the anatomical planes of the external nose," to prevent the entrance of water into the nose during swimming and diving—"an artificial substitute" for the compressor narium muscle. Swimmers and divers who have used this device have been "significantly free of nasal disturbances," often in spite of prolonged stay in the water and "stunt" diving.

Nasal Osteomata

A. S. HANDOUSA (*Journal of Laryngology and Otology*, 55:197, Apr. 1940) notes that benign new growths of the nose

and sinuses are of rare occurrence; malignant growths are much more common. In the last seven years, out of 840,000 patients at the Nose, Throat and Ear Department of the Kasr-El-Ainy Hospital of Cairo, Egypt, only 37 had benign growths of the nose or nasopharynx, and of these 18 were nasal osteomata. The most usual site of origin of these tumors was the frontal bone (14 cases), usually the nasal spine of this bone; in one case the tumor arose from the right os planum of the ethmoid bone; in 2 cases from the anterior wall of the maxillary sinus; and in one case from the presphenoid region. In all these cases the point of origin of the tumor was in the region of an ossification center, showing that "they follow the general rule of origin" of osteomata of the long bones. The age at which the patients were first observed varied from twelve to fifty-four years, the majority being less than twenty-eight years of age. In 3 of the cases in which the tumor was not removed surgically, the patients were seen again at a later period. All these patients were over twenty-five years of age when first examined, and on the second examination, there was no change in the size or character of the tumor, indicating that growth had ceased. It is evident that nasal osteomata, like osteomata of the long bones, are "essentially an affection of the bones during their period of growth" and cease to grow after that period. In all the cases in this series, tuberculosis and syphilis could be definitely excluded. Sinusitis was present in most of the cases, but not in all; the bony growth is apparently not caused by the sinus inflammation, but may be a predisposing cause of sinus infection. The author considers that these tumors arise as a result of the multiplication of a "sequestered rest" from one of the epiphyses of the affected bone. In 4 of the cases, the osteoma was discovered during a routine examination; the most usual symptoms in this series were either a simple swelling or a gradually increasing exophthalmos; other symptoms observed could usually be attributed to the accompanying

sinusitis, rather than to the osteoma *per se*. Operation for removal of nasal osteoma is indicated if the tumor gives rise to symptoms or complications. Operation is done by the extranasal route. Before operation the site of attachment of the tumor should be definitely determined by x-ray examination; this simplifies the operation, making it possible to cut through the affected bone slightly beyond the site of attachment, thus leaving the tumor with its cartilaginous covering and pedicle free in the cavity, ready for removal. The cavity left is usually a dilated sinus or group of sinuses, which is treated as indicated by the conditions found—state of the mucosa, presence or absence of pus; the wound is closed externally with an intranasal drain. This method of operation, the author has found, involves no severe hemorrhage, and does not require carotid ligation.

Tonsillectomy in the Emergency Treatment of Angina Granulocytopenic States

Ö. HOLSTI and his associates at the University of Helsinki, Finland (*Acta medica Scandinavica*, 103:430, March 8, 1940) report that in cases of tonsillitis and peritonsillitis with a good leukocyte reaction, they have performed tonsillectomy if the condition did not clear up "within a reasonable time" under medical treatment. In several cases of septic sore throat, tonsillectomy has resulted in rapid recovery; the wound has healed well. In 1938, a tonsillectomy operation was planned for a patient with septic sore throat, when it was found that she had a very low white cell count (500 leukocytes) with only 10 per cent granulocytes. A further study of her history showed that she had a chronic essential granulocytopenia, with frequent minor attacks of sore throat. In this attack, the tonsillitis was severe with some membrane and the patient was seriously ill. On the theory that this severe infection might be the cause—rather than the result—of the acute agranulocytic phase of the blood picture, tonsillectomy was done. The treatment that had been employed prior

to operation—injections of liver extract and prontosil—was continued. Within twenty-four hours after operation, the patient showed definite improvement with a marked drop in temperature and cessation of chills; there was also a rise in the leukocyte count. The wound healed somewhat slowly; the patient has been in better general condition than before the operation. The leukocyte count has become normal, except when a respiratory infection occurs, when it falls to 2500 to 3000 with a corresponding fall in the percentage of granulocytes. Since that time tonsillectomy has been done in 3 other cases of granulocytopenic angina with or without prontosil and liver treatment. All of these patients have made a good postoperative recovery, with a rapid drop in temperature in the first twenty-four hours, and a more or less rapid leukocyte response. The wounds healed well. These results justify further trial of tonsillectomy in granulocytopenic states with tonsillar infection; and more detailed study of the effect of the operation on the blood cells and bone marrow.

Post-Tonsillectomy Pulmonary Abscess Aborted with Sulfapyridine

K. M. HOUSER and T. FITZ-HUGH, JR. (*Archives of Otolaryngology*, 31:855, May 1940) note that pulmonary abscess following tonsillectomy may be due either to embolism or to inhalation of septic material. This complication of tonsillectomy appears to be less frequent than formerly. In "nearly 16,000 tonsillectomies" performed at the University of Pennsylvania Hospital since 1926 (over half with local anesthesia) there have been only 2 cases of serious pulmonary complications. One of these cases is reported because of results obtained with the use of sulfapyridine. The patient was a woman, forty-two years of age, in good general condition at the time the tonsillectomy was done; local anesthesia was employed. On the second night after operation, she had a chill and the temperature rose rapidly; following this septic fever and chills accompanied by marked prostra-

tion continued in spite of sulfanilamide therapy and blood transfusions. Blood cultures were negative. On the eighth day there were signs of consolidation in the right lung, unproductive cough, dyspnea and tachycardia, slight cyanosis, icterus and pallor, indicating a septic embolic pneumonia (pre-abscess stage). There was also acute hemolytic anemia, evidence of a "sensitization reaction" to sulfanilamide. This drug was discontinued, a transfusion given, and treatment with sulfapyridine begun; improvement was evident within twenty-four hours; and the dosage of sulfapyridine was reduced on the fourth day.

The lung cleared and fever and cough subsided by the tenth day, but the administration of sulfapyridine was continued for another four days. There were no untoward reactions to the drug, and the patient was discharged well and has continued to be well for a year. The authors conclude that sulfapyridine is of definite value in the treatment of pulmonary suppuration following tonsillectomy if given in the pneumonic (pre-abscess) stage before "gross cavitation occurs"; also that sulfapyridine can be given with safety even if the patient shows "a potentially serious" reaction to sulfanilamide.



A Tuning Fork Audiometer

A. ROTH (*Archives of Otolaryngology*, 31:680, Apr. 1940) states that he had previously devised an "acoustimeter," consisting of a series of calibrated tuning forks mounted on a turret, but this proved to be cumbersome and difficult to standardize. He has now devised a new type of audiometer consisting of a series of calibrated forks with a detachable hammer. The forks are light in weight and are held suspended on the examiner's fingers by means of a cross pin which leaves the fork "a freely suspended vibrating source of sound." The method of testing and the chart used are based on "the standard scale of threshold of hearing to threshold of feeling used with electrical audiometers." A new principle of this instrument is a cup-shaped sound collector placed at the end of the stem; this "conveys the sound clearly and completely to the ear." The sound collector is brought into light contact with or close to the ear every several seconds until the sound becomes very

faint, then the collector is pressed firmly over the auricle, removed and pressed on again alternately, until the sound is no longer perceived. The stem of each fork has a slot for the insertion of the hammer, which is detached after each strike. In testing hearing, the hammer is raised to a horizontal position and dropped; when it rebounds it is caught and removed. The duration of audibility is observed in seconds and marked on the chart; when this procedure is carried out for the whole series of forks, a continuous curve of acuity of hearing can be obtained. There are three columns, for each fork on the chart, spaced at intervals of several seconds. Each total column represents the interval from the instant of the strike to the loss of audibility for the normal ear. The first column is spaced for the use of a light hammer, the second for a heavy hammer, the third for a heavy hammer struck by hand. Striking by hand is employed only in cases of marked impairment of hearing near "the borderline of total deafness." In the author's original experiments he calibrated the tuning forks by means of a sound level indicator; they may be standardized also by an electrical audiometer. The forks remain constant in pitch and intensity potentials, as there are "no wearable and varying elements." In the average

case both ears can be tested in less than ten minutes.

Audiometric Range in Allergy

G. J. GREENWOOD (*Laryngoscope*, 50:326, Apr. 1940) finds that while allergic reactions involving the external and the inner ear are quite frequently reported, allergic states of the middle ear, which may be present, have not been proven by cytological and pathological studies. The author has made a special study of the hearing and otological symptoms in 65 allergic individuals, 41 of whom had hay fever. None of these patients complained of "stiffness" of the ear; 6 complained of impaired hearing, and one of these noted that hearing was worse during allergic attacks; 4 had tinnitus and in one of these cases the tinnitus accompanied the attacks of hay fever; 5 gave a history of rotatory vertiginous attacks. The tympanic membrane showed changes in only 13 cases, ranging from a dusky peripheral hyperemia in a retracted membrane to a thickened, opaque, but normally placed membrane. There were no tympanic scars, chalk plaques, or dehiscences in any case. The hearing in these cases was tested with a pitch range audiometer; 15 persons with normal hearing were used as controls. The allergic patients showed "a marked deficit" in the lower tone limit as compared to the normal controls, while the hearing for the upper tones was more nearly normal. The per cent hearing loss for speech was 16.5 per cent greater in the right ear and 15.2 per cent greater in the left ear in the allergic patients than in the normal controls, although the average age of the allergic patients was seven years less than that of the controls. The author notes that no sections of tympanic mucosa were obtained and no cytological studies were made in these cases, hence the findings reported "must, of necessity, be accepted with reservations."

Significance of Aphasia as a Symptom of Otogenic Extradural Abscess

F. ALTMANN (*Archives of Otolaryngology*, 31:819, May 1940) notes that

aphasia is one of the most common symptoms of abscess of the temporal lobe, but the presence of aphasia does not necessarily indicate that a temporal lobe abscess is present even when there is acute or chronic suppuration of the middle ear. Aphasia may be caused by damage in the region of the first temporal convolution by other intracranial lesions, especially otogenic extradural or subdural abscess, or localized meningitis. In cases in which aphasia is associated with otitis media and the operation reveals an extradural abscess of the middle fossa, it is often difficult to determine whether the aphasia is due to external pressure alone, or to inflammatory or edematous changes in the temporal lobe, or to the formation of a temporal lobe abscess. The author reports one case of large extradural abscess complicating chronic suppurative otitis, in which aphasia did not clear up after operation, yet puncture of the temporal lobe at three different points revealed nothing pathologic. The patient made a good recovery and the aphasia gradually disappeared. In the author's second case no real extradural abscess was found at operation, but external pachymeningitis of the middle fossa.



Puncture of the temporal lobe in five places gave negative results. In this case the aphasia must be explained as due to inflammation of the superficial layers of the brain substance or at least to collateral inflammatory edema in the temporal lobe region. The author notes that because of the similar mechanism of development of aphasia in extradural abscess or leptomeningitis and in temporal lobe abscess complicating suppurative otitis, it is very difficult, and often impossible, to make a differential diagnosis. Where the temporal lobe damage is due chiefly to external pressure by the extradural abscess, a differential may be made when this pressure is relieved by operation, but if inflammatory changes are predominant, differential diagnosis becomes "practically impossible," except by temporal lobe puncture.

Otogenous Parietal Cerebral Abscess Due to Pneumococcus Type III

W. B. HAMBY and his associates at the Buffalo (N. Y.) General Hospital (*New York State Journal of Medicine*, 40:627, Apr. 15, 1940) report a case of solitary parietal lobe abscess complicating otitis media in a child. The abscess was excised, and the infecting organism found to be *Pneumococcus* type III. Sulfanilamide and *Pneumococcus* type III serum were given; the total dosage of sulfanilamide was 23.4 gm. in three weeks. The

pneumococcus was demonstrated in the cerebral hernia two and four weeks after operation, but there was no meningeal infection, and the authors are of the opinion that the spread of infection was prevented by the combined serum and sulfanilamide treatment. The wound eventually healed, and the child was discharged showing some sequelae (spasticity of arm and leg) which are progressively improving. The authors note that parietal lobe abscess is a rare complication of otitis media, only 26 cases being reported in literature up to 1936. The route of infection is by way of the communicating veins to the parietal cortex.

The Platform of the American Medical Association

The American Medical Association advocates:

1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

The Syphilitic Aortitis Picture

1. X-ray evidence of aortic dilation.
2. Accentuation of 2nd aortic sound.
3. History of circulatory embarrassment.
4. Increased retro-manubrial dullness.
5. Progressive heart failure.
6. Substernal pain.
7. Paroxysmal dyspnea.

Leo B. Harrison, M.D.
Tri-State Med. J., Dec., 1939

MEDICAL TIMES, AUGUST, 1940

MEDICAL BOOK NEWS

Edited by
Alfred E. Shipley, M.D., Dr. P.H.

• All books for review and communications concerning Book News should be addressed to the Editor of this department, 1313 Bedford Avenue, Brooklyn, N. Y.

Intestinal Infections

THE DYSENTERIC DISORDERS. The Diagnosis and Treatment of Dysentery, Sprue, Colitis and other Diarrhoeas in General Practice. By Philip Manson-Bahr, M.D. Baltimore, Williams & Wilkins Company, [c. 1939]. 613 pages, illustrated. 8vo. Cloth, \$8.00.

AS the subtitle states, this work deals with the diagnosis and treatment of dysentery, sprue, colitis and other diarrhoeas in general practice. Five chapters are devoted to general topics; then, in order, sections are assigned to the bacillary dysenteries, the protozoal dysenteries, the helminthic dysenteries, the infective diarrhoeas, the steatorrhoeas, affections of the colon resembling dysentery (various types of colitis), and other causes of diarrhoea and dysenteriform symptoms. Laboratory aspects are fully covered

in a 44-page appendix, and a bibliography and a detailed index conclude the volume. The author, well-known already as editor of Manson's *Tropical Diseases*, the standard English textbook in this field, has succeeded in presenting the rich results of his

own thirty years' clinical experience with full and just consideration for the views and work of others. The subject is exhaustively covered, as the table of contents indicates, and the lavish inclusion of tables and plates, many of the latter in color,

done by the author, adds greatly to the value of the text. No more authoritative, more complete or better illustrated work in this field exists and Manson-Bahr's *Dysenteric Disorders* should live through many subsequent editions.

ELLISTON

FARRELL

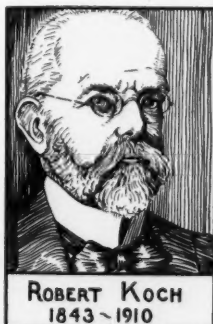
Classical Quotations

• In future the fight against this terrible plague of mankind will deal no longer with an undetermined something, but with a tangible parasite, whose living conditions are for the most part known and can be investigated further. The fact that this parasite finds the conditions for its existence only in the animal body and not, as with anthrax bacilli, also outside of it under usual, natural conditions, warrants a particularly favorable outlook for success in the fight against tuberculosis. First of all, the sources from which the infectious material flows must be closed as far as this is humanly possible. One of these sources, and certainly the most essential one, is the sputum of consumptives, whose disposal and change into a harmless condition has thus far not been accomplished. It cannot be connected with great difficulties to render such phthisical sputum harmless by suitable procedures of disinfection, and to eliminate thereby the largest part of the infective tuberculous material.

Robert Koch.

The Aetiology of Tuberculosis.

Berliner klinische Wochenschrift, 19:221, 1882.



ROBERT KOCH
1843-1910

Biliary Diseases

DISEASES OF THE GALLBLADDER AND BILE DUCTS. By Waltman Walters, M.D., and Albert M. Snell, M.D. Philadelphia, W. B. Saunders Company [c. 1940]. 645 pages, illustrated. 8 v o. Cloth, \$10.00.

ALTHOUGH this book contains only six hundred and forty-five pages, it is truly a monumental work. The authors and their co-workers of the Mayo Clinic have made use of their wide experience at the Clinic and have produced a book which

gives not only a clear and accurate description of all phases of liver and bile duct diseases, including beautiful illustrations of pathological and roentgenological findings, but is written in a most pleasing literary style. Reading the book with its historical accounts of each condition, its conversational description of every step in diagnosis and treatment, produces a pleasing relaxation from the strain of practice. The chapters on Anatomy by Higgins, on Physiology by Bollman, on Pathology by MacCarty and on Cholecystography by Kirklin are each worth while and lasting contributions to medical literature. The chapter on preoperative and postoperative care by Butt, is important, as is the one on symptoms following operations upon the biliary tract, by Gray. Altogether this book will outlive most other medical books, and will be quoted as an authority for many years to come.

A. F. R. ANDRESEN.

Zinsser's Latest Bacteriology

A TEXTBOOK OF BACTERIOLOGY. By Hans Zinsser, M.D., and Stanhope Bayne-Jones, M.D. Eighth edition. New York, D. Appleton-Century Co. [c. 1939]. 990 pages, illustrated. 4to. Cloth, \$8.00.

THE new edition of this well-known textbook presents an excellent combination of the highest scientific standard with technical detail. The clarity and completeness of presentation, based on profound judgment, the discussion of unsolved problems, spiced with new and original suggestions for their solution, and the brilliant style make reading of the book attractive and stimulating. This unique book is invaluable, not only for the student, but also for the experienced bacteriologist.

ULRICH FRIEDEMANN.

Body Minerals

MINERAL METABOLISM. By Alfred T. Shohl, M.D. New York, Reinhold Publishing Company, [c. 1939]. 384 pages, illustrated. 8vo. Cloth, \$5.00.

THE subject matter in this book is of real scientific value. Mineral metabolism is discussed in detail, and includes all basic inorganic and organic relationships. Minerals in the body tissues and fluids are given a prominent place. All glands of internal secretion and their relation to mineral metabolism are described. The subjects of magnesium and calcium are given a special chapter. Water metabolism, acid base equilibrium, and the latest studies on electrolytes in the blood and tissue are also considered. Mineral requirements are discussed in reference to different physiological changes such as pregnancy and lactation. The final chapter on mineral intake, balance and requirement fill a long felt need for such a text.

To sum up, the reviewer finds that *Mineral Metabolism* is well written, supplies needed information, and is highly recommended.

MORRIS ANT.

Medical Practice in Africa

TEN YEARS IN THE CONGO. By W. E. Davis. New York, Reynal & Hitchcock, [c. 1940]. 301 pages. 8vo. Cloth, \$2.50.

HERE is a book as thrilling as any of the tales of adventure which we devoured in our youth. And it's true! No creatures or situations that sometimes taxed our imaginations more than that of the story-teller!

Dr. Davis has written a fascinating account of his experiences as a medical missionary in Africa. A genuine love for the country and its primitive inhabitants colors the narrative throughout. There is much to startle and surprise the reader. Physicians will find this volume of particular interest.

MAYER E. ROSS.

YOU may obtain any of the books reviewed in this department by sending your remittance of the published price to Book Department of the **MEDICAL TIMES**, 95 Nassau Street, New York, N. Y.

Wisconsin Group on Hematology

A SYMPOSIUM ON THE BLOOD AND BLOOD-FORMING ORGANS. Madison, University of Wisconsin Press, [c. 1939]. 264 pages, illustrated. 8vo. Cloth, \$3.50.

IN response to widespread requests the Wisconsin Alumni Research Foundation has made available the papers by outstanding investigators delivered at the Institute for the Consideration of the Blood and Blood-Forming Organs in September 1939. A complete survey of the titles is necessary for the reader to appreciate the full scope of the volume covering almost every conceivable aspect of hematology. Basic principles to the most recent scientific aspect are stressed in each division, the anemias, leukemias, Hodgkins disease, mononucleosis, polycythemia, into the subjects of the reticulo-endothelial system, marrow culture, blood coagulation, porphyrin relationship to blood disease. In no other single volume is such a broad layout of factual and research data presented. The bibliography is given but no index. It is a necessary book for modern conceptions of the blood diseases.

IRVING M. DERBY.

Early Public Health Efforts

A HISTORY OF CONTAGIOUS DISEASE CARE IN CHICAGO BEFORE THE GREAT FIRE. By Constance B. Webb. Chicago, University of Chicago Press, [c. 1940]. 169 pages. 8vo. Paper, \$1.25.

THE author of this thesis is to be congratulated on producing a monograph which is of public health and historical value. So incongruous were the actions and failures to act in the available accounts of Chicago's early efforts to curb epidemic disease and to establish an effective health program, that in order to give an explicable picture the author has consulted in their original a variety of information sources. The result of this research is important, and is instructive in demonstrating in no uncertain way the difficulties which have confronted the medical profession in its efforts to make public health available to an indifferent and apathetic population. The book reveals the disregard by private business interests of the state laws and city ordinances which have been formulated for the preservation of the

health of the community. It is doubtful if a more ghastly picture or disregard of refuse disposal could be found anywhere, than that which the author brings to us from the pages of the Chicago Evening Journal of 1870. The dangers inherent in this were realized by the medical profession and, as always, it consistently fought for measures which could correct the situation.

JOSEPH C. REGAN.

Coryza Therapy

TRAPPING THE COMMON COLD. By George S. Foster, M.D. New York, Fleming H. Revell Company, [c. 1940]. 125 pages. 12mo. Cloth, \$1.25.

IN this small book for the non-medical reader, the author stresses well-known rules for healthful living as a means of preventing colds. The values of proper diet, sleep, posture, exercise and good habits generally are emphasized. Coffee, tea, alcohol and tobacco are all considered bad.

No specific measures have been found, but a sort of an ideal way of living is recommended which would be hard for some to follow, but is doubtless advisable, and probably would lessen the incidence of colds.

W. E. MCCOLLOM.

Pictorial Operative Surgery

ILLUSTRATIONS OF SURGICAL TREATMENT. Instruments and Appliances. By Eric L. Farquharson, M.D. Baltimore, Williams and Wilkins Company, [c. 1939]. 338 pages, illustrated. 4to. Cloth, \$6.50.

THIS volume is unique in that the entire book is devoted to illustrations of various operative procedures, manipulations, and instruments used in accomplishing treatment of bone pathology whether traumatic or congenital in origin. Some of the methods illustrated we think for the most part are sound and practical, however, they might be controversial when considered by some of our American fracture experts.

The text is devoted entirely to explaining the procedures that are illustrated. Pages 292-331 illustrate instruments used in gastro-intestinal, gall-bladder, genitourinary, and thoracic work. The book is essentially an illustrated guide for the resident, house

surgeon and surgical assistant. However, there are some procedures illustrated in the rarer type of fractures which would make it a valuable book for the average general surgeon who is not making an exclusive specialty of traumatic surgery.

HERBERT T. WIKLE.

Faith and Disease

FAITHS THAT HEALED. By Ralph H. Major, M.D. New York, D. Appleton-Century Company, [c. 1940]. 290 pages, illustrated. 8vo. Cloth, \$3.00.

BEGINNING with the shrine of Asclepius at Epidaurus, Dr. Major traces the close relationship between faith and disease in various selected instances. In a series of interestingly written chapters he describes Lourdes, the medieval dancing mania, the Children's Crusade, and many other cases. While the chapters are interesting enough, it is to be deplored perhaps that Dr. Major has preferred to stay on the surface of things, without inquiring into the foundations, both sociological and psychological, of the "faiths that healed." Within its limits, however, the book is recommended to the doctor as interesting reading.

GEORGE ROSEN.

Infant Mortality

FETAL AND NEONATAL DEATH. A Survey of the Incidence, Etiology, and Anatomic Manifestations of the Conditions Producing Death of the Fetus in Utero and the Infant in the Early Days of Life. By Edith L. Potter, M.D. and Fred L. Adair, M.D. Chicago, University of Chicago Press, [c. 1940]. 207 pages, illustrated. 12mo. Cloth, \$1.50.

IN this little book all the known reasons for fetal and neonatal deaths are stated with an excellent exposition of the whole problem. The anatomy of the normal fetus and infant is well described. The material in this book is an excellent basis for investigation, and committees interested in the solution of this important problem will find this volume easily the best book in the field. It is highly recommended.

CHARLES A. GORDON.

Where Shall I Practice?

OPPORTUNITIES FOR MEDICAL PRACTICE IN THE UNITED STATES. By Daniel Harris, Ph.D. New York, the Author, [c. 1940]. 12 pages. 4to. Paper, 50c.

THIS is an interesting analysis of existing economic and social information from government sources. The material has been combined by the author in such a way that he ranks the States in opportunity values.

This may be of use to the physician who is thinking about where to locate.

ALEC N. THOMSON.

To Be Taken After Meals—cum grano salis
PHYSICIANS' FARE. By C. G. Learoyd. New York, Longmans, Green & Co., [c. 1939]. 302 pages. 12mo. Cloth, \$2.00.

THIS is a collection of twenty-three stories which have a medical background or, at least, a medical implication. The author, it would seem, is a British psychiatrist. In two of the articles—they can hardly be called stories—are sets of letters written to patients by the psychologist they consulted on the various phases of behaviorism which constituted their illnesses. In some of the tales, we run across a likeable general practitioner from Market Citron, a Fenland village. We meet him in murder or other mysteries, of which there are several in the collection, or again in some less exciting but no less interesting medical experience. A few of the yarns are purely imaginative. These may find the medical reader less receptive. A good story for the doctor and for the layman is called *The Point of View*, and tells about a psychiatrist who has succeeded in making his "Pleasant Valley," a retreat for mental cases and addicts, a real money maker, but who has ceased to be otherwise interested in his patients and their families. When, however, he learns that his son, a student at Cambridge College has to be certified to a neurological nursing home, he is pathetically impressed by the other point of view.

JOSEPH RAPHAEL.

MEDICAL TIMES, AUGUST, 1940

A New Edition of Bing's Compendium

COMPENDIUM OF REGIONAL DIAGNOSIS IN LESIONS OF THE BRAIN AND SPINAL CORD. A concise introduction to the principles of localization of diseases and injuries of the nervous system. By Robert Bing. Translated and edited by Webb Haymaker, 11th ed. St. Louis, The C. V. Mosby Company, [c. 1940]. 292 pages, illustrated. 4to. Cloth, \$5.00.

THE eleventh edition of Bing's *Regional Diagnosis in Lesions of the Brain and Spinal Cord*, translated by Haymaker, has the usual fine quality of this

work that has characterized it from its first appearance. The anatomical and physiological aspects of regional diseases of the brain and spinal cord are emphasized as before. The material is brought up to date, and several new excellent illustrations are included.

The book is highly recommended for students and practitioners as well as for young neurologists and neurological surgeons.

LEO M. DAVIDOFF.

Books Received

Obesity and Leanness. By Hugo Rony, M. D. Philadelphia, Lea & Febiger, [c. 1940]. 300 pages, illustrated. 8vo. Cloth, \$3.75.

A Manual of the Common Contagious Diseases. By Philip M. Stimson, M. D. Third edition. Philadelphia, Lea & Febiger, [c. 1940]. 465 pages, illustrated. 8vo. Cloth, \$4.00.

A Textbook of Pathology. By W. G. MacCallum. Seventh edition. Philadelphia, W. B. Saunders Company, [c. 1940]. 1302 pages, illustrated. 8vo. Cloth, \$10.00.

Clinical Heart Disease. By Samuel A. Levine, M. D. Second edition. Philadelphia, W. B. Saunders Company, [c. 1940]. 495 pages. 8vo. Cloth, \$6.00.

The Badianus Manuscript (Codex Barberini, Latin 241) Vatican Library. An Aztec Herbal of 1552. Introduction, Translation and Annotations by Emily Walcott Emmart. Baltimore, The Johns Hopkins press, [c. 1940]. 341 pages, illustrated. f°. Cloth, \$7.50.

Doctors in Shirt Sleeves. Musings on Hobbies, Meals, Patents, Sports and Philosophy. Edited by Sir Henry Rashford. New York, Veritas Press, [c. 1940]. 294 pages. 8vo. Cloth, \$2.50.

Dog-Team Doctor. The story of Dr. Romig. By Eva G. Anderson, Ph.D. Caldwell, Idaho, The Caxton Printers, Ltd., [c. 1940]. 298 pages, illustrated. 8vo. Cloth, \$2.75.

The March of Medicine. Edited by the Committee on Lectures to the Laity of the New York Academy of Medicine. New York, Columbia University Press, [c. 1940]. 168 pages. 8vo. Cloth, \$2.00.

Malaria and Colonisation in the Carolina Low Country 1526-1696. By St. Julien Ravenel Childs. Series LVIII, Number 1 of The Johns Hopkins University Studies in Historical and Political Science. Baltimore, Johns Hopkins Press, [c. 1940]. 292 pages. 8vo. Paper, \$2.50.

Neoplastic Diseases: A Treatise on Tumors. By James Ewing, M.D. Fourth edition. Philadelphia, W. B. Saunders Company, [c. 1940]. 1160 pages, illustrated. 8vo. Cloth, \$14.00.

Asthma and the General Practitioner. By James Adam, M.D. Baltimore, Williams & Wilkins Company, [c. 1939]. 157 pages. 8vo. Cloth, \$2.00.

Manual of Peripheral Vascular Disorders. By David W. Kramer, M.D. Philadelphia, The Blakiston Company, [c. 1940]. 448 pages, illustrated. 8vo. Cloth, \$6.00.

Physical Therapy for Nurses. By Richard Kovács, M.D. Second edition. Philadelphia, Lea & Febiger, [c. 1940]. 335 pages, illustrated. 8vo. Cloth, \$3.25.

The New International Clinics. Original Contributions: Clinics; and Evaluated Reviews of Current Advances in the Medical Arts. Edited by George M. Piersol, M.D. Volume II, New Series Three. Philadelphia, J. B. Lippincott Company, [c. 1940]. 365 pages, illustrated. 8vo. Cloth, \$3.00.

Complete Guide for the Deafened. By A. F. Niemoeller, M.A. New York, Harvest House, [c. 1940]. 256 pages. 8vo. Cloth, \$3.00.

Handbook of Hearing Aids. By A. F. Niemoeller, M.A. New York, Harvest House, [c. 1940]. 156 pages. 8vo. Cloth, \$3.00.

Chemistry and Medicine. Papers Presented at the Fiftieth Anniversary of the Founding of the Medical School of the University of Minnesota. Edited by Maurice B. Visscher. Minneapolis, University of Minnesota Press, [c. 1940]. 296 pages, illustrated. 8vo. Cloth, \$4.50.

Embolias Gasosas Cerebrais em Cirurgia Toraco-Pulmonar. By Joao Martins Castello Branco. Rio de Janeiro, Canton & Reile, Praca Cruz Vermelha, 3-A, [c. 1940]. 119 pages, illustrated. 8vo. Paper.

Sex in Marriage. By Ernest R. Groves and Gladys H. Groves. New York, Emerson Books, Inc., [c. 1940]. 250 pages. 12mo. Cloth, \$2.00.

A Man Who Found a Country. By Dr. A. Nakashian. New York, Thomas Y. Crowell Company, [c. 1940]. 279 pages, illustrated. 8vo. Cloth, \$2.75.

Obstetrics and Gynecology. By the Departmental Staff of the University of Chicago and Other Contributors. Edited by Fred L. Adair, M.D. Volumes I & II. Philadelphia, Lea & Febiger, [c. 1940]. 8vo. Illustrated. Cloth, \$20.00.

Social and Biological Aspects of Mental Disease. By Benjamin Malzberg, Ph.D. Uica, State Hospitals Press, [c. 1940]. 360 pages. 8vo. Cloth, \$2.50.

Dr. Daniel Drake's Letters on Slavery to Dr. John C. Warren, of Boston. Reprinted from "The National Intelligencer," Washington, April 3, 5 and 7, 1851. New York, Schuman's, [c. 1940]. 69 pages. 8vo. Cloth, \$5.00.

Principles of Hematology. By Russell L. Haden, M.D. Second edition. Philadelphia, Lea & Febiger, [c. 1940]. 362 pages, illustrated. 8vo. Cloth, \$4.50.

Cancer Research at the University of Pennsylvania

ESTABLISHMENT of a Foundation for the study of the treatment of cancer which will make the University of Pennsylvania an important center for the collection and utilization of vitally needed information in this field, was recently announced by Dr. Thomas S. Gates, president of the University.

Known as the Foundation for the Study of Neoplastic Diseases, this new program is made possible and will be supported by The Penn Mutual Life Insurance Company for a period of five years.

Cancer is the second highest contributor to the mortality statistics of life insurance companies, both in number of deaths among policyholders and in total amount of death claims. It is exceeded only by heart disease in this respect.

The Foundation will be under the immediate direction of Dr. John S. Lockwood, who will have the cooperation of all chiefs of service in the University Hospital. It will coordinate methods of diagnosis and methods and results of treatment in such departments of the University Hospital as those of medicine, surgery, gynecology, ophthalmology, otolaryngology,

dermatology, gastro-enterology, and radiology.

American Association for the Advancement of Oral Diagnosis

THE annual meeting of the American Association for the Advancement of Oral Diagnosis will be held on October 17 and 18, 1940, at the Academy of Medicine Building, 2 East 103rd Street, New York City.

This meeting will come at the end of the first week of the Graduate Fortnight of the Academy; both physicians and dentists of the organized medical and dental professions throughout the Western Hemisphere who are members in good standing in their respective organizations in the countries in which they practice are eligible for membership in the Association; the constitution provides for the organizing of regional divisions by members of both professions who have such standing and are members; said divisions are components of the American Association for the Advancement of Oral Diagnosis.

For further information and membership blanks address Dr. H. Justin Ross, Executive office, 515 Madison Avenue, New York City.



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Notice to Members

COMPETITION FOR THE WILLIAM BROWNING PRIZE OF \$50. IN CASH HAS STARTED

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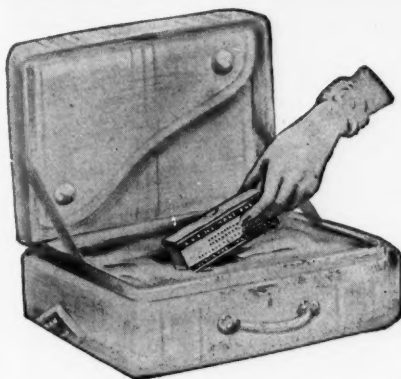
All essays must be typewritten in double-spaced copy. Competing essays must

not be signed but must be distinguished by a motto and accompanied by a sealed envelope bearing the same motto containing the name and address of the writer.

Essays must be in before November 1, 1940. The award is to be made at the annual meeting in January, 1941.

MEDICAL TIMES, AUGUST, 1940





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Dietetic Digest

Aiding Absorption of Vitamin K

L OZINSKY and Gottlieb in the *Journal of Biological Chemistry* (133, 635 (1940) #2) suggest that the value of bile salts in aiding absorption of vitamin K and substances possessing vitamin K activity may be due to their non-specific factor of high surface activity. The authors selected dioctyl sodium sulfosuccinate as a non-toxic and highly surface active substance. The chemical 2-methyl-1, 4-naphthoquinone was absorbed from the gastrointestinal tract equally as well in the presence of dioctyl sodium sulfosuccinate as in the presence of bile salts.

Nicotinic Acid in Xerostomia

S APHIR in the *American Journal of Digestive Diseases* (7, 298 (1940) #7) reports that in etiologically considering xerostomia, nicotinic acid deficiency should be included.

Xerostomia, or aptyalism, asalia or stomatitis sicca, is characterized by abnormal dryness of the mouth. A dry, rough surface with numerous cracks and fissures which bleed easily replace the normal, moist smooth surface of the lining membrane of the mouth, tongue and buccal regions. The condition being so painful, the patient cannot chew or eat properly with subsequent early inanition and cachexia.

True idiopathic xerostomia may be caused by any of the following diseases:

THE increased importance of the field of nutrition has prompted a review of the progress of the medical sciences in dietetics and nutrition. Each month in these pages is presented the current literature in this field, abstracted by
Medeline Oxford Holland, D.Sc.

atrophy, hypoplasia or fibrosis (Mikuliz' disease) of the salivary glands; lesions of the central nervous system, such as result from an injury to the head; lesions of the peripheral nerves supplying the salivary glands; psychogenic factors or mental shock, senile atrophic changes, X-ray treatment for facial hypertrichosis.

Dryness of the mouth which occurs in such diseases as diabetes mellitus and insipidus, high fever and diarrhea should not be confused with this condition.

The author reports a case of xerostomia in which yeast, thiamin chloride and nicotinic acid were administered in fairly large doses where previous medication had failed.

Two weeks later the patient was considerably relieved and there was quite an amount of moisture present in the oral cavity. By administration of thiamine hydrochloride and yeast the condition became worse but when nicotinic acid was added the condition again improved. By experiment it was found that 50 mg. of nicotinic acid t. i. d. were sufficient as a maintenance dose.

Roentgen Studies of Gastric Activity

R EYNOLDS, Macy, Hunscher and Olson in the *American Journal of Roentgenology and Radium Therapy* (43, 517 (1940) #4) report on roentgenological studies made on the gastrointestinal response of average healthy children to barium test meals in various media.

It has been previously shown that acid concentration is not the principal factor which controls the opening and closing of the pyloric sphincter in man. The initiation of gastric emptying is not affected by difference in viscosity of various foodstuffs. The hydrochloric acid which passes from

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the stomach into the intestine through the pylorus is generally so diluted that its concentration in the latter is ineffective. Gastric motor activity is affected by conditions

within the intestine such as mechanical distention, chemical irritation, action of hypertonic or hypotonic solutions, and the presence of products of protein and starch digestion. An active principle of humoral mechanism called enterogastrone has been found to inhibit gastric secretion and motility when acted upon by fat and carbohydrate. Later the possible presence of two active principles, one inhibiting secretion and one motility, was shown. The mechanism affecting secretion or motility may be humoral or nervous or both but regardless of its origin it has a definite effect on the provision of suitable conditions for digestion of various foodstuffs.

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Vitallium Plates Interposed in Arthroplasties of the Knee

CAMPBELL in the American Journal of Surgery (March 1940, vol. xlvii, #3, 639-641) presents a preliminary report concerning the reconstruction of a new joint by arthroplasty.

Gold and silver, used for interposition between the articular surfaces of an ankylosed joint, was tried and abandoned over fifty years ago. Smith-Petersen however has revived this principle in arthroplasty of the hip joint, using an entirely different method. In this a non-irritating metal cap is placed over the femur. Glass and bakelite were first attempted and discarded. Adopted, however, were metal caps of alloy vitallium, introduced by Dr. Charles Venable, and it is of these of which we speak.

This cap fixed in no way to the bone gives free play between the cap and the head of the femur, as well as between the cap and the acetabulum. This method was employed with excellent results in a small number of cases of bilateral ankylosis as a result of atrophic or rheumatoid arthritis. In one case of ankylosis following a pyogenic infection this procedure was also followed out. Insufficient time, postoperatively has elapsed to determine the end result.

For one patient, Smith-Petersen introduced a fibrocartilaginous lining in the new joint following the interposition of the vitallium cap. The Robert Jones Lecture in 1930, on the use of fascia lata as a lining membrane coincides with the author's observation of the evolutionary physiologic changes in the above.

Also employed by Venable was a vitallium cap for lining the joint in arthroplasty of the hip, by means of fixation of the cap with a metal screw. This allowed motion only between the cap and acetabulum.

Further investigation of these methods is truly warranted even though insufficient time has elapsed to foretell their true value, and only a limited number of surgeons have centered their attentions toward them.

On this basis the author has interposed a vitallium plate in two patients with ankylosis of the knee following acute pyogenic infectious arthritis. Similar, in technique, to that of arthroplasty of the knee, wherein fascia lata is used, slightly less space for interposition of the membrane was created than usual. Plate size was estimated, pre-operatively, by means of roentgenograms and constructed to fit over the anterior of the lower end of the infected femur. Maintenance of position was accomplished through two posterior surfaces of the condyles, and by one vitallium screw inserted into the anterior of the shaft of the femur.

A dearth of mobility was a disappointing feature in two cases in which this plate has been interposed. Lack of adequate joint space may be the cause, with future plans calling for enlarged joint space for interposition of the plate, to equal that of joints which are lined with fascia lata.

Results following arthroplasty of the knee wherein fascia lata was interposed have been so satisfactory that this material, vitallium, will be retained until some other be secured to minimize operative procedure and provide a more natural joint.



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